Some Schools Examinations of 2020 on Algebra and Statistics

1 Cairo Governorate

Shoubra Educational Zone
St. Catherine Language School

Answer the following questions :

1 Choose the correct answer :

1 The multiplicative inverse of $\sqrt{3}$ is .....

(a) $\sqrt{3}$ (b) $-\sqrt{3}$ (c) $\frac{\sqrt{3}}{3}$ (d) $\frac{3}{\sqrt{3}}$

2 The S.S. of the equation : $x^2 + 9 = 0$ in $\mathbb{R}$ is .....

(a) $\varnothing$ (b) $\{3 , -3\}$ (c) $\{3\}$ (d) $\{-3\}$

3 If $(k , 3)$ satisfies the relation : $y = 2x + 5$, then $k =$ .....

(a) 1 (b) -1 (c) 2 (d) 3

4 The volume of a cube is 27 cm^3 , then its lateral area = ... cm^2

(a) 12 (b) 54 (c) 36 (d) 27

5 If $2x + 1 = 7$, then $3x =$ .....

(a) 6 (b) 9 (c) 12 (d) -12

6 The mean of the values : 3 , 2 , 4 , 7 is .....

(a) 2 (b) 3 (c) 7 (d) 4

2 Complete :

1 $3a^2b \times$ ..... $= 12a^4b^2$

2 If the mode of the values : 6 , 9 , $x - 2$, 10 is 6 , then $x =$ .....

3 $[2 , 7] - \{7\} =$ .....

4 The slope of the straight line parallel to x-axis is .....

5 The median of : 24 , 20 , 11 , 36 , 40 is .....

3 [a] If $x = \sqrt{3} + \sqrt{2}$, $y = \frac{1}{\sqrt{3} + \sqrt{2}}$, **find the value of :** $\frac{x + y}{xy}$

[b] If the slope of the straight line passing through the two points A $(4 , k)$, B $(3 , 2)$ is 5 , find the value of k

4 [a] **Find in $\mathbb{R}$ the S.S. of the inequality :**

$-1 \leq 2x + 3 < 5$ and represent the S.S. on the number line.

[b] **Simplify :** $\sqrt{50} + 2\sqrt{18} - \sqrt{32} - 8\sqrt{\frac{1}{2}}$

5 [a] If the volume of a sphere is $\frac{500}{3}\pi$ cm^3 , find the length of its diameter.

[b] **Find the mean of the following frequency distribution :**

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	4	5	6	3	2	20

2 Cairo Governorate

East Nasr City Educational Zone
Alson Lang School

Answer the following questions :

1 Choose the correct answer :

1 $\left(\sqrt{5}+\sqrt{3}\right)^2\left(\sqrt{5}-\sqrt{3}\right)^2 =$ .....

(a) 2 (b) 3 (c) 4 (d) 8

2 The lower limit of a set is 4 and the upper limit is 8 , then its centre is .....

(a) 8 (b) 6 (c) 4 (d) 2

3 $5 \in$ .....

(a) $\{55\}$ (b) $]1\ ,5[$ (c) $]-\infty\ ,4]$ (d) $]-1\ ,\infty[$

4 The mode of the values : 4 , 11 , 8 , 2 X is 8 , then $X =$ .....

(a) 2 (b) 4 (c) 9 (d) 11

5 If the volume of a cube is 27 cm^3 , then the perimeter of one of its faces is ..... cm.

(a) 12 (b) 9 (c) 15 (d) 40

6 If $(-1\ ,5)$ satisfies the equation : $3X + k y = 7$, then $k =$ .....

(a) 2 (b) 0.8 (c) 3 (d) 5

2 Complete :

1 If the volume of a sphere is $\frac{9}{2}\pi$ cm^3 , then its radius length is .....

2 $(2X - 3)(3X + 5) = 6X^2 +$ .....

3 $[3\ ,4] - \{3\ ,5\} =$ .....

4 If A $(1\ ,-2)$, B $(5\ ,-4)$, then the slope of $\overleftrightarrow{AB}$ is .....

5 The mean of the values : 7 , 11 , 21 , 10 and 16 is .....

3 [a] **Simplify to the simplest form :**

1 $6\sqrt[3]{16}+\sqrt[3]{54}-6\sqrt[3]{\frac{1}{4}}$ 2 $5\sqrt{2}\left(2\sqrt{2}+\sqrt{12}\right)$

[b] If $X = \frac{4}{\sqrt{7}-\sqrt{3}}$, $y = \sqrt{7}-\sqrt{3}$

, **prove that :** X and y are conjugate numbers , **then find the value of :** $(X + y)^2$

4 **(a)** Find the total area of a right circular cylinder of volume 72π cm^3 and height 8 cm. (in terms of π)

(b) **Find in $\mathbb{R}$ the S.S. of :**

1. $5 - 3x > 11$, then represent the solution set on the number line.
2. $8x^3 + 7 = 8$

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5 **(a)** **Graph the relation :** $y = 3x + 1$ and if $(2 , a)$ satisfies the relation , find the value of a

(b) **Find the arithmetic mean of the following frequency distribution :**

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	4	6	8	7	5	30

3 Cairo Governorate

Helwan Educational Zone
Saint Mary Lang. School

Answer the following questions :

1 **Choose the correct answer :**

1. The slope of the straight line passing through $(4 , 1) , (6 , -3)$ is ——————
   (a) -1 (b) 0 (c) 2 (d) -2
2. The solution set of : $2x^3 + 54 = 0$ in $\mathbb{R}$ is .....
   (a) $\{3\}$ (b) $\{-3\}$ (c) $\{-3 , 3\}$ (d) $\varnothing$
3. If $(6k , 4k)$ satisfies the relation : $x + y = 50$, then $k =$ .....
   (a) 0 (b) 10 (c) 15 (d) 5
4. If the order of the median of some values is tenth , then the number of these values is .....
   (a) 19 (b) 20 (c) 21 (d) 22
5. If $2x = 14$, then $6x =$ .....
   (a) 12 (b) 28 (c) 36 (d) 42
6. $]-1 , 3] \cup \{0 , -1\} =$ .....
   (a) $]0 , 3]$ (b) $]-1 , 3[$ (c) $[-1 , 3]$ (d) $[0 , 3]$

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2 **Complete each of the following :**

1. The volume of the sphere whose radius length equals 14 cm. is ..... $\left(\pi = \frac{22}{7}\right)$
2. If the mode of the values : 16 , 18 , $x - 3$, 14 is 16 , then $x =$ .....

3 The median of the values : 29 , 24 , 30 , 23 , 18 , 28 is .....

4 If the slope of a straight line equals zero , then the line is parallel to .....

5 If the lower limit of a set is 28 and the upper limit of it is 32 , then the centre of the set equals .....

3 **[a]** If $X =]-\infty , 4]$ and $Y =]2 , \infty[$, find using the number line :

1 $X \cap Y$ 2 $X \cup Y$ 3 $\acute{X}$

[b] A right circular cylinder whose volume is 704 cm^3 and its diameter length is 8 cm. , then find its height. $\left(\pi = \frac{22}{7}\right)$

4 **[a]** Find the solution set in $\mathbb{R}$ of the inequality :
$-4 \leq 5X + 1 < 11$ and represent it on the number line.

[b] Simplify : $\sqrt[3]{54} + \sqrt{50} + \sqrt[3]{16} + \sqrt{8}$

5 **[a]** Graph the relation : $y = 2X + 2$

[b] Find the arithmetic mean of the following data :

Sets	20 –	22 –	24 –	26 –	Total
Frequency	16	12	14	8	50

4 Giza Governorate

El-Dokki Zone
Math. Inspection

Answer the following questions :

1 **Choose the correct answer :**

1 $2\sqrt{x} \times 3\sqrt{x} =$ ..... (where $x > 0$)

(a) $6x^2$ (b) $6x$ (c) $5x^2$ (d) $5x$

2 If $(m , 2)$ satisfies the relation : $x + 2y = 7$, then $m =$ .....

(a) -4 (b) -3 (c) 3 (d) 4

3 $\left(\sqrt{5} - 2\right) + \left(\sqrt{5} + 2\right) =$ .....

(a) 1 (b) 2 (c) 4 (d) $2\sqrt{5}$

4 The volume of a cube is 27 cm^3 , then the area of one of its faces is ..... cm^2

(a) 3 (b) 6 (c) 9 (d) 12

5 If $a = \frac{2}{\sqrt{3} - 1}$, $b = \sqrt{3} - 1$, then $2 \times b =$ .....

(a) 1 (b) 2 (c) 3 (d) 4

6 The arithmetic mean of the values : 7 , 4 , 9 , 10 , 11 , 16 , 13 is .....

(a) 13 (b) 11 (c) 10 (d) 9

2 Complete the following :

1 Let A $(1 , 3)$, B $(2 , 5)$, then the slope of $\overline{AB}$ equals .....

2 The S.S. of the equation : $(x + 3)(x - 1) = 0$ in $\mathbb{R}$ is .....

3 The median of the values : $6 , 7 , 9 , 10 , 8 , 5 , 4$ is .....

4 The mode of the values : $5 , 6 , 7 , 6 , 9 , 5 , 7 , 5 , 9 , 4 , 6 , 9 , 5$ is .....

5 $[1 , 5] - \{1 , 5\} =$ .....

3 (a) If $X = [2 , 8]$, $Y =]-3 , 4[$, **find each of the following using the number line :**

1 $X \cap Y$ 2 $X \cup Y$

(b) **Find the S.S. of the inequality :** $5x + 1 \geq 21$ in $\mathbb{R}$ and represent the solution set on the number line.

4 (a) **Find the value of :** $\sqrt{20} + \sqrt{45} - \sqrt{80}$ (showing the steps of your answer)

(b) Find the volume of a right circular cylinder of height 10 cm. and its radius length is 7 cm.

5 (a) **Represent graphically the relation :** $y = 3 - x$

(b) **Find the arithmetic mean of the following frequency distribution :**

The set	0 –	10 –	20 –	30 –	40 –	Total
Frequency	4	5	6	3	2	20

5 Giza Governorate — 6th October Directorate

Answer the following questions :

1 Choose the correct answer :

1 The S.S. of the equation : $x^2 + 5 = 0$ in $\mathbb{R}$ is .....

(a) 5 (b) $\{\sqrt{5} , -\sqrt{5}\}$ (c) $\{\sqrt{5}\}$ (d) $\varnothing$

2 If the point $(a , 1)$ satisfies the relation : $x + y = 5$, then $a =$ .....

(a) -4 (b) 1 (c) 4 (d) 5

3 If four times a number is 48 , then third of this number is .....

(a) 12 (b) 6 (c) 4 (d) 8

4 $[-1 , 5] -]-1 , 5[=$ .....

(a) $\varnothing$ (b) $\{-1 , 5\}$ (c) $[-1 , 5]$ (d) $]-1 , 5[$

5 The irrational number between 3 and 4 is .....

(a) $\sqrt{17}$ (b) $\sqrt{6}$ (c) $\sqrt[3]{29}$ (d) 3.6

6 A cube the sum of its edge lengths is 48 cm. , then its volume is ..... cm^3

(a) 64 (b) 6 (c) 4 (d) 46

2 Complete :

1 If the lower limit of a set is 4 and its centre is 6 , then its upper limit is .....

2 If $\frac{1}{x} = \sqrt{5} - 2$, then $x =$ ..... (in its simplest form)

3 A sphere its diameter length is 6 cm. , then its volume is ..... cm^3

4 If A $(-1, 4)$, B $(x, 2)$ and the slope of $\overleftrightarrow{AB} = -2$, then $x =$ .....

5 The S.S. of : $\sqrt{5}\, x \leq 5$ is ..... in $\mathbb{R}$

3 (a) A right circular cylinder , its radius length equals its height and its volume is $216\,\pi$ cm^3. Find the height of the right cylinder.

(b) Find the S.S. in $\mathbb{R}$:

1 $5 > 2x - 3 > -1$ (represent it on the number line)

2 $(2x - 1)^3 = 125$

4 (a) If $X =]-\infty, 1]$ and $Y = [-2, 4[$, **find :**

1 $X \cap Y$ 2 $Y - X$ 3 $\grave{X}$

(b) Simplify : $5\sqrt{8} + 2\sqrt[3]{2} - 2\sqrt{50} - \sqrt[3]{16}$

(c) If $x = \sqrt{7} + \sqrt{4}$, $y = \frac{3}{x}$

1 **Prove that :** x and y are two conjugate numbers.

2 **Find :** $x^2 + 2xy + y^2$

5 (a) If the relation : $x + 4y = -4$ is represented in the opposite figure where A is the intersection point with X-axis and B is the intersection point with y-axis , **then find :**

1 The coordinates of A and B

2 The area of ΔABO where O is the origin point.

3 The slope of $\overleftrightarrow{AB}$

(b) From the following frequency distribution :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	7	10	12	13	k	50

1 Find k 2 Find the arithmetic mean.

6 Alexandria Governorate

El-Montazah Educational Zone
Math's Supervision

Answer the following questions :

1 Choose the correct answer :

1 $\sqrt{4}$ ..... $]-2, \infty[$

(a) $\in$ (b) $\notin$ (c) $\subset$ (d) $\not\subset$

2 $\sqrt{\frac{x}{y}}$ = ... (where $y > 0$)

(a) $\frac{1}{y}\sqrt{x}$ (b) $\frac{1}{x}\sqrt{y}$ (c) $\frac{1}{y}\sqrt{xy}$ (d) $\frac{x}{y}$

3 The order of the median of the values : 4 , 5 , 6 , 7 and 8 is the .....

(a) third. (b) fourth. (c) fifth. (d) sixth.

4 If $x = (-2)^4$, $y = -2^4$, then .....

(a) $x = y$ (b) $x > y$ (c) $x < y$ (d) $x \leq y$

5 If $(2k, k)$ satisfies the relation : $y + 2x = 5$, then $k =$ .....

(a) 5 (b) 4 (c) 2 (d) 1

6 If the mean of the values : 9 , 5 , 6 , x , 14 is 7 , then $x =$ .....

(a) 3 (b) 2 (c) 1 (d) 5

2 Complete :

1 The additive inverse of the number $-5 + \sqrt{3}$ is .....

2 If the mode of the values : 4 , 11 , 8 , 2 x is 4 , then $x =$ .....

3 The cube whose volume is 8 cm^3 , then the sum of all edge lengths is ..... cm.

4 If the lower limit of a set is 4 and the upper limit is 8 , then its centre is .....

5 The straight line which represents the relation : $2x + 7y = 14$ intersects x-axis at the point (..... , ...)

3 [a] If $x = \sqrt{7} - \sqrt{6}$, $y = \frac{1}{x}$, **prove that :** $(x + y)^2 = 28$

[b] If A $(3, 4)$, B $(5, a)$ and the slope of $\overleftrightarrow{AB} = 3$, find the value of a

[c] Find the lateral area of a right circular cylinder of volume 72π cm^3 and height 8 cm.

4 [a] **Graph the relation :** $y = 2 - x$

[b] **Simplify :** 1 $\sqrt{32} - 6\sqrt{\frac{1}{2}}$ 2 $\sqrt[3]{128} + \sqrt[3]{16}$

[c] If $X =]-\infty, 2[$ and $Y = [-1, 5]$, **find using the number line :**

1 $X \cap Y$ 2 $X \cup Y$ 3 $\acute{X}$

5 **[a] Complete :** The S.S. of the equation : $x^2 + 1 = 0$ in $\mathbb{R}$ is .....

[b] Find in $\mathbb{R}$ the S.S. of the inequality :

$5 - 3x > 11$, then represent the S.S. on the number line.

[c] Find the mean of the following data :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	4	5	6	3	2	20

7 Alexandria Governorate

East Educational Zone
Math's Supervision

Answer the following questions :

1 **Choose the correct answer :**

1 The mode for the values : 3 , 5 , 3 , 4 , 3 is .....

(a) 3 (b) 4 (c) 5 (d) 12

2 Let A (3 , 5) and B (5 , – 1) , then the slope of $\overleftrightarrow{AB}$ = ...

(a) $-\frac{1}{3}$ (b) – 3 (c) 3 (d) $\frac{1}{3}$

3 If the point (a , 1) satisfies the relation : $x + y = 5$, then a = ...

(a) 1 (b) – 4 (c) 4 (d) 5

4 The solution set of the equation : $x^2 + 9 = 0$ in $\mathbb{R}$ is .....

(a) $\varnothing$ (b) $\{-3\}$ (c) $\{3\}$ (d) $\{3 , -3\}$

5 4.274 ≈ ..... $\left(\text{to the nearest } \frac{1}{10}\right)$

(a) 4 (b) 4.2 (c) 4.3 (d) 4.27

6 The lower limit of a set is 4 and the upper limit is 8 , then its centre is .....

(a) 2 (b) 4 (c) 6 (d) 8

2 **Complete the following :**

1 The surface area of a sphere of diameter length 14 cm. equals .....

2 $\left(\sqrt{8} + \sqrt{2}\right)\left(\sqrt{8} - \sqrt{2}\right)$ = ...

3 The conjugate of the number $\frac{2\sqrt{5} - 3\sqrt{2}}{\sqrt{2}}$ is .....

4 A cube whose volume is 8 cm^3 , then the sum of lengths of all its edges equals .....

5 The S.S. of the equation : $x(x^3 - 1) = 0$ in $\mathbb{R}$ is .....

3 **[a] Find in the simplest form :** $6\sqrt{\frac{1}{2}} + \frac{1}{3}\sqrt[3]{54} - \sqrt{8} - \sqrt[3]{2}$

[b] If $x = \sqrt{5} + \sqrt{2}$ and $y = \sqrt{5} - \sqrt{2}$, **find the value of :** $\frac{x + y}{xy - 1}$

4 **[a] Find the S.S. in $\mathbb{R}$ of the inequality :** $2x + 1 \leq 7$, then represent it on the number line.

[b] Find the volume of the sphere whose diameter length is 4.2 cm. $\left(\pi = \frac{22}{7}\right)$

5 **[a]** If the slope of $\overleftrightarrow{AB}$ is 3 where $A = (3 , 4)$, $B = (4 , y)$, find the value of y

[b] Find the arithmetic mean of the following distribution :

Sets	4 –	8 –	12 –	16 –	20 –	Total
Frequency	2	4	8	6	4	24

8 El-Kalyoubia Governorate — Math Supervision

Answer the following questions :

1 **Choose the correct answer :**

1 The solution set of the equation : $x + 5 = 5$ in $\mathbb{R}$ is .....

(a) $\{0\}$ (b) $\{10\}$ (c) $\{-10\}$ (d) $\varnothing$

2 The rational number that lies between 0.2 , 0.3 is .....

(a) 0.21 (b) 0.11 (c) 0.31 (d) 0.33

3 $\sqrt[3]{x^6} = \sqrt{.....}$

(a) x^3 (b) x^2 (c) x (d) x^4

4 If $(2 , -5)$ satisfies the relation : $3x - y + c = 0$, then $c =$ .....

(a) 1 (b) – 1 (c) 11 (d) – 11

5 If the arithmetic mean of the set of values : 18 , 22 , 29 , 2k – 1 , k is 18 , then k = ...

(a) 1 (b) 7 (c) 29 (d) 19

6 The median of the values : 34 , 23 , 25 , 40 , 22 , 4 is .....

(a) 22 (b) 23 (c) 24 (d) 25

2 **Complete :**

1 0.3 = ... $\left(\text{in the form of } \frac{a}{b}\right)$

2 $\sqrt[3]{343}$ = ...

3 The slope of any line parallel to x-axis is .....

4 The mode is the ——— common value in the set.

5 If the order of the median of some values is the fourth , then the number of the values is ———

3 **(a) Find the solution set of :** $5x - 3 < 2x + 9$ **in** $\mathbb{R}$

(b) Find the value of : $\sqrt{18} + \sqrt{54} - 3\sqrt{2} - \frac{1}{2}\sqrt{24}$

4 (a) The radius length of the base of a right circular cylinder is 4 cm. and its height is 9 cm. Find the volume in terms of π

(b) If A (2 , – 1) , B (10 , 3) and C (2 , 3) , find the slope of each of $\overleftrightarrow{AB}$ and $\overleftrightarrow{BC}$

5 **(a) Find :** $[-1 , 4] - [-3 , 2[$ **by using the number line.**

(b) The following table shows the frequency distribution for the score of 50 students in an examination :

Sets	2 –	6 –	10 –	14 –	18 –	22 –	26 –	Total
Frequency	3	5	9	10	12	7	4	50

Find the mean of the students score.

9 El-Monofia Governorate

Shiben Elkom Directorate
Supervisor of Math

Answer the following questions :

1 **Choose the correct answer :**

1 The degree of the algebraic term $2x^3y^2$ is the ———

(a) second. (b) third. (c) fourth. (d) fifth.

2 If the radius length of a sphere is 6 cm. , then its volume is ——— cm^3

(a) 6π (b) 36π (c) 72π (d) 288π

3 If x is a negative number , then the number ——— is positive.

(a) x^2 (b) x^3 (c) $2x$ (d) $\frac{1}{2}x$

4 $\sqrt{8} - 2\sqrt{2} =$ ———

(a) 4 (b) 8 (c) zero (d) 2

5 If $|x| = 7$, then $x =$ ———

(a) 7 (b) – 7 (c) ± 7 (d) 8

6 The arithmetic mean for five values is 13 , then the sum of these values is ———

(a) 70 (b) 56 (c) 65 (d) 13

2 Complete :

1 The slope of the straight line parallel to X-axis is

2 If the mode of the values 18 , 11 , 4 , 2 X is 18 , then X =

3 If (k , 2) represents the relation : X + 2 y = 5 , then k =

4 If the order of the median of some values is the seventh , then the number of these values is

5 The median of a + 2 , a , a − 2 , a + 1 , a + 1 is

3 [a] Simplify : $\sqrt{75} - 6\sqrt{\frac{1}{3}} - 3\sqrt{12}$

b] If A = [−2 , 3] , B = [1 , ∞[, find using the number line

1 A ∩ B 2 A ∪ B

c] The diameter length of a cylinder is 7 cm and its height is 10 cm Find the lateral area of the cylinder

4 a Represent the relation : 2 X + y = 4 , then find the slope of the straight line representing this relation.

(b If $X = \frac{1}{\sqrt{7}+\sqrt{6}}$, y $= \sqrt{7}+\sqrt{6}$, **prove that : X and y are two conjugate numbers , then find :** $(X + y)^2$ in the simplest form

5 [a] Find the S.S. in ℝ for the inequality :

$\sqrt[3]{-8} \leq X + 1 \leq \sqrt{9}$, then represent it on the number line

b] From the following frequency distribution :

The set	10	20	30	40	50	Total
Frequency	9	20	35	k	9	100

Find : 1 The value of k 2 The arithmetic mean

10 El-Gharbia Governorate

Answer the following questions :

1 Choose the correct answer :

1 The S.S. in ℝ for the equation : $X^3 + 27 = 0$ is

(a) {−3} (b) {2} (c) {3} (d) ∅

2 If the mode of the values $3, 6, x+1, 6, 3, 1$ is 6, then $x =$

(a) 1 (b) 2 (c) 5 (d) 0

3 The cube whose volume is 64 cm³, the length of one of its edges is ... cm

(a) 8 (b) 3 (c) 16 (d) 4

4 If $x < \sqrt{51} < x+1$, $x \in \mathbb{Z}$, then $x =$

(a) 8 (b) 7 (c) 6 (d) 5

5 $\sqrt{7} + \sqrt{7} =$

(a) $\sqrt{28}$ (b) 7 (c) 14 (d) $\sqrt{4}$

6 If the point $(a, \ldots)$ satisfies the relation $x + y = 5$, then $a =$

(a) 1 (b) 2 (c) 5 (d) 4

2 Complete

1 $\sqrt[3]{\ldots} = \sqrt{4}$

2 If the order of the median of some values is seventh, then the number of these values is ...

3 If the lower limit of a set is 8 and the upper limit of the same set is 10, then the centre of this set is

4 $[\ldots, 6] \cap [\ldots, 9] =$

5 The slope of X-axis is

3 [a] **Reduce to the simplest form:** $\frac{\sqrt{3}}{\sqrt{5}-\sqrt{3}} + \frac{\sqrt{5}}{\sqrt{5}+\sqrt{3}}$

b] **Prove that:** $\sqrt[3]{128} + \sqrt[3]{6} - 2\sqrt[3]{54} = 0$

c **Find in $\mathbb{R}$ the solution set of the inequality** $-3 < 4x - 7 < 5$

4 a A right circular cylinder whose height is 10 cm and its volume is 90π cm³. Find the length of the radius of its base

b) If $X = [\ldots, 4]$, $Y =]\ldots, \infty[$, **find each of the following using the number line**

1) $X \cap Y$ 2) $X \cup Y$ 3) $X - Y$

5 [a] **Simplify:** $\sqrt{50} + \sqrt{18} - \sqrt{32}$

b) **Find the arithmetic mean of the following frequency distribution.**

Sets	5 –	15	25	35 –	45	Total
Frequency	...	5	6	3	2	20

El-Dakahlia Governorate

Answer the following questions :

1 Choose the correct answer from those given

1) $[3, 5] \cap]3, 5[=$

(a) $\varnothing$ (b) $[3, 5]$ (c) $]3, 5[$ (d) $\{3, 5\}$

2) If the point $(a, 1)$ satisfies the relation $x + y = 5$, then $a =$

(a) -4 (b) 1 (c) 4 (d) 5

3) If the lower limit of a set is 4 and the upper limit is 8, then its centre is

(a) 2 (b) 4 (c) 6 (d) 8

4) If the radius length of a sphere is 6 cm, then its volume = ... cm^3

(a) 6π (b) 36π (c) 72π (d) 288π

5) $\sqrt{100 - 36} = 10$

(a) 6 (b) 2 (c) 4 (d) 6

6) The intersection point of the ascending and descending cumulative curves determines the ..... on the sets axis

(a) order of the median (b) median

(c) mean (d) mode

2 Complete each of the following :

1) $\sqrt{3}, \sqrt{12}, \sqrt{27}, \sqrt{48}, \ldots$ in the same pattern

2) The slope of any straight line parallel to X-axis is .....

3) If $n \in \mathbb{Z}^+$, $n < \sqrt{26} < n + 1$, then $n =$ .....

4) The arithmetic mean of the set of values $3, x + 5, x + 4$ equals .....

5) If the mode of the values $4, 11, 8, 2x, 4$ is 4, then $x =$ .....

3 (a) Find the slope of $\overleftrightarrow{AB}$ where A $(-1, 3)$ and B $(2, 5)$, is the point C $(8, 1) \in \overleftrightarrow{AB}$?

(b) If $x = \sqrt{7} + \sqrt{5}$, $xy = 2$, find the value of : $\frac{x + y}{x - y}$

4 (a) Find the S.S. of the inequality : $2 \leq 3x + 7 < 10$ in $\mathbb{R}$, then represent the interval of solution on the number line.

(b) Find the height of a right circular cylinder whose height is equal to its base radius length and its volume is 72π cm^3

6 Simplify to the simplest form $\sqrt{8} + \sqrt{54} - 3\sqrt{2} \div \sqrt{16}$

7 Find the arithmetic mean of the following frequency distribution

Sets	5	15	25	35	45	Total
Frequency	4	5	6	3	2	20

12 Smalla Generator

Answer the following questions :

1 Choose the correct answer :

1 The slope of y-axis is

(a) 0 (b) $\frac{1}{2}$ (c) undefined (d)

2 The mean of 8 , 19 , 11 , 12 , 10 is

a) 9 b) 15 c) 20 d) 11

3 The multiplicative inverse of $\frac{\sqrt{6}}{2}$ is

a) $\frac{\sqrt{6}}{2}$ b) $\frac{\sqrt{6}}{3}$ c) $\frac{\sqrt{6}}{2}$ d) $2\sqrt{6}$

4 If the age of Ali now is x years , then his age after 12 years is years

(a) $x + 12$ (b) $x - 12$ (c) $x + 15$ $2x$

5 $\sqrt[3]{125} = \sqrt{\quad}$

a) 5 b) 100 c) 10 d) 25

6 If the mode of 7 , 10 , k , 3 , 9 , 7 , 7 , then k =

a) 3 b) 10 c) 4 d) 9

2 Complete :

1 $a^4 \times 5a^2 =$

2 The median of 15 , 7 , 16 , 9 , 4 , 20 is .....

3 $[2 , 7] - \{2 , 7\} =$ .....

4 If (3 , k) satisfies the relation $2x + y = 10$, then k =

5 $\{1 , 2 , 3\} \cap \{2 , 4 , 5\} =$ .....

3 a) The area of a sphere is 616 cm^2 Find its diameter length $\pi = \frac{22}{7}$

b) Graph the relation : $y = 2x$

c) Find the slope of $\overleftrightarrow{AB}$ where A (– 1 , 5) , B (2 , 6)

4 **(a) Simplify :** $\sqrt{72} + 2\sqrt{32} - 3\sqrt{2}$

b) Find the S.S. in $\mathbb{R}$ and represent it on the number line of : $1 < 3 - 2x \leq 1$.

5 **(a) If** $A = [-2, 3]$, $B =]0, 5[$, **using the number line find :**

i) $A \cup B$ ii) $A \cap B$ iii) $A - B$

b) From the following frequency distribution :

Sets	10	20	30	40	50	Total
Frequency	7	10	8	6	9	40

Find the mean

15 Kafr El-Sheikh Governorate

Answer the following questions

1 **Choose the correct answer .**

1) The S.S. of the equation $x(x^2 + 4) = 0$ in $\mathbb{R}$ is

(a) $\{4\}$ (b) $\{0\}$ (c) $\{4, 0\}$ (d) $\{4, -4\}$

2) The slope of the straight line which is perpendicular to X-axis is

(a) 1 (b) zero (c) −1 (d) undefined

3) If the arithmetic mean of the numbers 5 , 4 , x , 3 , 6 , 4 is 4 , then x =

(a) 5 (b) 4 (c) 6 (d) 3

4) If the mode of the numbers 5 , 2 , 4 , x , 2 is 5 , then x

(a) 4 (b) 6 (c) 7 (d) 5

5) If $-2x < 6$, then x

(a) < 6 (b) > -3 (c) > 6 (d) > -6

6) $\mathbb{Z} \cap \mathbb{N} =$

(a) $\{0\}$ (b) $\mathbb{Z}$ (c) $\mathbb{N}$ (d) $\mathbb{Q}$

2 **Complete the following :**

1) The multiplicative inverse of the number $\sqrt{10} - 3$ is

2) $[3, 5] \cap]3, 5[=$

3) The median of the numbers 45 , 19 , 15 , 30 , 20 is

4) $\sqrt{18} - \sqrt{2} =$

5) If the slope of the straight line passing through $(2, k)$, $(3, \ldots)$ is 2 , then k =

3 Find the lateral area of the right circular cylinder of volume 30π cm³ and height 6 cm

b **Find in the simplest form :** $3\sqrt{2}+\sqrt{8}-\sqrt{18}$

4 a **Find in $\mathbb{R}$ the S.S of the inequality** $x<2x-1<x+4$

b If $x=\sqrt{7}-\sqrt{5}$, $y=\frac{2}{x}$, find $\frac{x+y}{x-y}$ in the simplest form

5 a If $(-1, 5)$ satisfies the relation $3x+ky=7$, then find k

b **The following table shows the frequency of marks of 50 students**

Sets	2	6	8	10	12	14	16	Total
Frequency	3	6	8	10	11	k	4	50

Find : 1 The value of each of ℓ and k

2 The arithmetic mean for the marks of students

14 Seeing Generalization

Answer the following questions :

1 **Choose the correct answer :**

1 The simplest form of $(\sqrt{3}-\sqrt{2})(\sqrt{3}+\sqrt{2})$ is

a $\sqrt{3}$ b 1 c $\sqrt{2}$ d $\sqrt{5}$

2 The volume of a cube is 64 cm³, then its edge length is cm

a 4 b 8 c 16 d 64

3 The mean of the values 34, 23, 25, 40, 22, 12 is

a 22 b 23 c 24 d 26

4 If the point $(k, 1)$ satisfies the relation $x+y=5$, then $k=$

a 1 b 4 c −4 d 5

5 $(\sqrt[3]{2})^{3}=$

a 4 b 8 c 16 d 40

6 If the mode of the values $4, 11, 8, 2x$ is 4, then $x=$

a 2 b 4 c 6 d 8

2 **Complete :**

1 The S.S of $x^2+9=0$ in $\mathbb{R}$ is

2 $\sqrt{8}+\sqrt{18}-3\sqrt{2}=$

3 The mode of 3 , 5 , 3 , 4 , 3 is

4 $]-2,3[\cup \{-2,3\} =$

5 If the volume of a sphere $= \frac{9}{2}\pi$ cm^3 , then its diameter length equals ..... cm

3 a) **Find in the simplest form** $\sqrt{8}+\sqrt{12}-3\sqrt{2}-\frac{1}{2}\sqrt{8}$

b) **If** $x=\sqrt{5}-\sqrt{2}, y=\frac{3}{\sqrt{5}-\sqrt{2}}$, **prove that :** x and y are two conjugate numbers

4 a) **Represent graphically the linear relation :** $y = 2 - x$

b) **Find the solution set of the inequality :**

$-2 < 3x + 7 \leq 10$ in $\mathbb{R}$, then represent the S.S on the number line

5 a) A right circular cylinder of radius length 4 cm and its height is 9 cm

Find its volume in terms of π

b) **Find the arithmetic mean of the following frequency distribution**

Sets	5	5 –	25 –	35 –	45 –	Total
Frequency	7	13	x	14	8	50

10 - Aswan Governorate -

Answer the following questions

1 **Choose the correct answer .**

1 The multiplicative inverse of $\frac{\sqrt{3}}{5}$ is

(a) $\frac{\sqrt{3}}{5}$ (b) $\frac{5}{3}$ (c) $\frac{3}{5}$ (d) $\frac{5\sqrt{3}}{3}$

2 If $x=\sqrt{6}-\sqrt{2}, y=\frac{4}{x}$, then y =

(a) 4 (b) $\sqrt{6}+\sqrt{2}$ (c) 10 (d) $\sqrt{8}$

3 If the ordered pair $(2k, k)$ satisfies the relation $y + 2x = 5$, then k =

(a) 1 (b) 2 (c) 3 (d) 4

4 If the lower boundary of a set is 4 and the upper boundary is 8 , then its centre is

(a) 2 (b) 4 (c) 6 (d) 8

5 $[-\infty, 5] - [1, 5] =$

(a) $[2, 4]$ (b) $]1, 5[$ (c) $]0, \infty[$ (d) $]1, 5]$

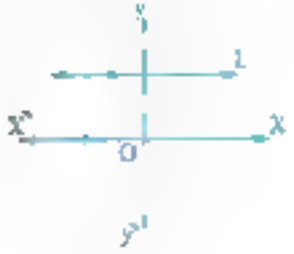
6 **In the opposite figure**

The slope of the straight line

L is ....

(a) positive. (b) negative.

(c) zero. (d) undefined



2 **Complete each of the following :**

1 $\sqrt[3]{64} = \sqrt{\ldots}$

2 If the relation $y = 3x + 4$, $x \in \{\ldots\}$, then $A = \ldots$

3 If the mode of the values $2, 7, x + 1, 7, 2$ is 7, then $x = \ldots$

4 $[-2, 5[\cap \mathbb{R}_+ = \ldots$

5 The median of the set of values $34, 23, 25, 40, 22, 4x$ is ...

3 **Find in the simplest form the value of** $\sqrt{125} + \sqrt[3]{16} + 2\sqrt{\ldots}$

(b) If $x = \sqrt{3} + 1$ and $y = \dfrac{2}{\sqrt{3}+1}$

1 **Prove that** x and y are conjugate

2 **Find the value of** $\dfrac{x^2 + y^2}{xy}$ **in the simplest form**

4 **(a)** $X = \{\ldots\}$ and $Y = \{\ldots\}$, using the number line find each of the following

1 $X \cup Y$ 2 $X - Y$ 3 $X \cap Y$

b) **Find the S.S. in** $\mathbb{R}$ **of** $2 \leq 3x + 7 \leq 10$ **and represent it on the number line**

5 **(a)** Represent graphically the relation $y = \ldots - x$ and if $(-4, b)$ satisfies the relation, find the value of b

b **Find the arithmetic mean of the following frequency distribution**

Sets of marks	5	15	25	35	45	Total
Number of pupils	7	10	12	13	8	50

Final Examinations

on Algebra and Statistics

Model Examinations of the School Book on Algebra and Statistics

Model 1

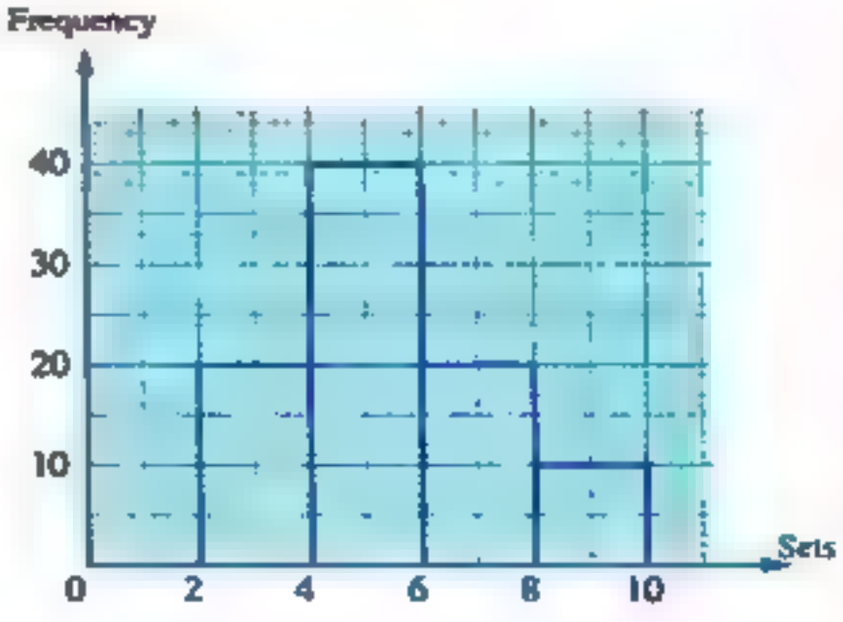
Answer the following questions :

1 Complete the following :

1. The S.S. of the equation : $(x^2 + 3)(x^3 + 1) = 0$ is ..... , $x \in \mathbb{R}$
2. If the lower boundary of a set is 10 and the upper boundary is x and its centre is 15 , then $x =$ .....
3. $]-2 , 2] \cup \{-2 , 0\} =$ .....
4. The cube whose volume is 8 cm^3 , then the sum of all its edge lengths = ... cm.
5. The multiplicative inverse of the number $(\sqrt{3} + \sqrt{2})$ is ..... in the simplest form.

2 Choose the correct answer from the given ones :

1. If the radius length of a sphere is 6 cm. , then its volume is .....
   (a) 6π cm^3 (b) 36π cm^3 (c) 72π cm^3 (d) 288π cm^3
2. If the point (a , 1) satisfies the relation $x + y = 5$, then a = ...
   (a) 1 (b) -4 (c) 4 (d) 5
3. $(2\sqrt[3]{2})^3 =$ .....
   (a) 4 (b) 8 (c) 16 (d) 40
4. The median of the values : 34 , 23 , 25 , 40 , 22 , 4 is .....
   (a) 22 (b) 23 (c) 24 (d) 25
5. If the arithmetic mean of the values : 27 , 8 , 16 , 24 , 6 , k is 14 , then k = ...
   (a) 3 (b) 6 (c) 27 (d) 84
6. **In the opposite figure :**
   The value of the mode = ...
   (a) 4 (b) 5
   (c) 6 (d) 40



Final Examinations

3 [a] Find the value of : $\sqrt{18}+\sqrt[3]{54}-3\sqrt{2}-\frac{1}{2}\sqrt[3]{16}$

[b] If $x=\frac{3}{\sqrt{5}-\sqrt{2}}$ and $y=\sqrt{5}-\sqrt{2}$

, prove that : x and y are two conjugate numbers.

4 [a] The area of a square is 1089 cm^2. Find the length of its diagonal.

[b] Find the S.S. of the inequality : $\frac{3x+1}{6}<x+1<\frac{x+4}{2}$ in $\mathbb{R}$

, then represent it on the number line.

5 [a] The radius length of the base of a right circular cylinder is $4\sqrt{2}$ cm. and its height is 9 cm. Find its volume in terms of π and if its volume equals the volume of a sphere , find the radius length of the sphere.

[b] Find the arithmetic mean of the following frequency distribution :

The sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	7	10	12	13	8	50

Model 2

Answer the following questions :

1 Complete the following :

1 The additive inverse of the number : $-\sqrt{3}-\sqrt{5}$ is .....

2 $(\sqrt{8}+\sqrt{2})(\sqrt{8}-\sqrt{2})=$ .....

3 The conjugate of the number $\frac{2\sqrt{5}-3\sqrt{2}}{\sqrt{2}}$ is .....

4 If the volume of a sphere is $\frac{9}{2}\pi$ cm^3 , then its diameter length is .... cm.

5 $[3,4]-\{3,5\}=$ .....

2 Choose the correct answer from the given ones :

1 If the volume of a cube is 27 cm^3 , then the area of one of its faces is .....

(a) 3 cm^2 (b) 9 cm^2 (c) 36 cm^2 (d) 54 cm^2

2 If the mode of the values 4 , 11 , 8 , 2 x is 4 , then $x=$ .....

(a) 2 (b) 4 (c) 6 (d) 8

Algebra and Statistics

3 If the arithmetic mean of the values 18 , 23 , 29 , 2 k – 1 , k is 18 , then k = ...

(a) 1 (b) 7 (c) 29 (d) 90

4 If the lower limit of a set is 4 and the upper limit is 8 , then its centre is .....

(a) 2 (b) 4 (c) 6 (d) 8

5 A right circular cylinder the radius length of its base is r cm. and its height equals its diameter length , then its volume = ... cm^3.

(a) πr^3 (b) πr^2 (c) $2 \pi r^3$ (d) $2 r^3$

6 The solution set of the equation : $x(x^2 - 1) = 0$, $x \in \mathbb{R}$ is .....

(a) {0} (b) {1} (c) {– 1} (d) {0 , – 1 , 1}

3 [a] **Reduce to the simplest form :** $\frac{\sqrt{3}}{\sqrt{5}-\sqrt{3}} + \frac{\sqrt{5}}{\sqrt{5}+\sqrt{3}}$

[b] **Prove that :** $\sqrt[3]{128} + \sqrt[3]{16} - 2\sqrt[3]{54} = 0$

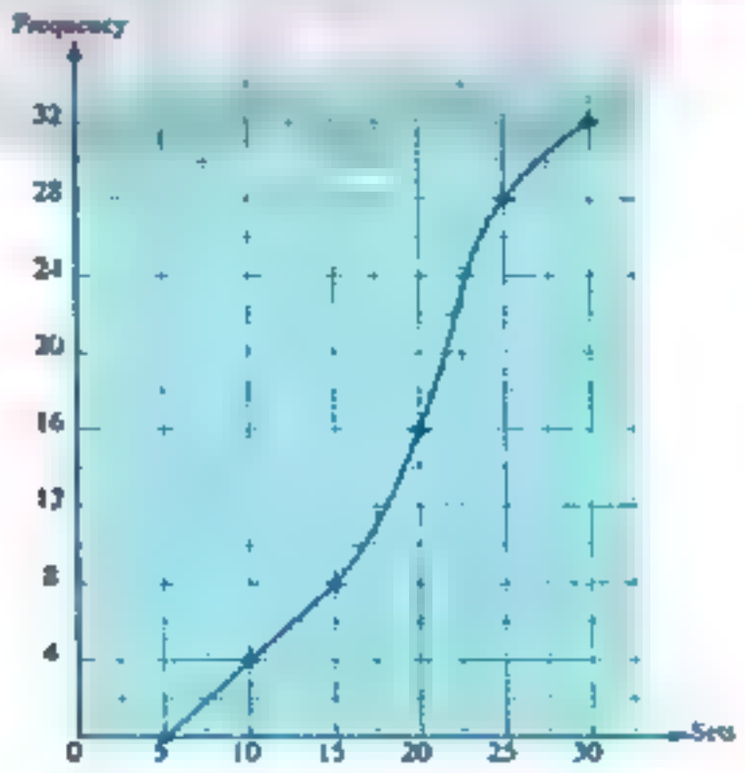
4 [a] **Find the S.S. of the inequality :** $-2 < 3x + 7 \leq 10$ **in** $\mathbb{R}$ **, then represent the interval of solution on the number line.**

[b] **If** $x = \sqrt{2 + \sqrt{3}}$ **, find the value of :** $x^4 - 2x^2 + 1$

5 [a] The opposite graph represents the marks of 32 pupils in an exam.

Complete :

The median mark = ...



[b] **Find the arithmetic mean of the following frequency distribution :**

The sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	4	5	6	3	2	20

Model for the merge students

Answer the following questions :

1 Complete each of the following :

1 The conjugate of the number $\sqrt{3}+\sqrt{2}$ is ....

2 $\sqrt{18}+\sqrt{54}-3\sqrt{2}=$ .....

3 The mode for the numbers : 3 , 5 , 3 , 4 , 3 is ..... .

4 The median of the values : 2 , 3 , 5 , 7 , 9 is .....

5 The solution set of the equation : $x^2+9=0$ in $\mathbb{R}$ is .....

2 Choose the correct answer from those given :

1 The arithmetic mean for the values : 9 , 6 , 5 , 14 , 1 is ....

(a) 7 (b) 3 (c) 5 (d) 9

2 The simplest form of the expression : $(\sqrt{3}-\sqrt{2})(\sqrt{3}+\sqrt{2})$ is .....

(a) $\sqrt{3}$ (b) 1 (c) $\sqrt{2}$ (d) $2\sqrt{3}$

3 The additive inverse of the number $-\sqrt{5}$ is .....

(a) $\sqrt{5}$ (b) 5 (c) $\sqrt{2}$ (d) -5

4 $[3 , 5]-\{3 , 5\}=$ .....

(a) $]3 , 5[$ (b) $[3 , 5[$ (c) $\varnothing$ (d) $]3 , 5]$

5 A cube is of volume 64 cm^3 , then its edge length is ..... cm.

(a) 4 (b) 8 (c) 16 (d) 64

3 Match from the column (A) to the suitable one from the column (B) :

(A)	(B)
1 The S.S. of the equation : $x^2-25=0$ in $\mathbb{R}$ is	$[0 , 2]$
2 $[-3 , 2] \cap [0 , 2] =$	7
3 If the order of the median is fourth , then the number of values is	$\{5 , -5\}$
4 $\sqrt{3}$ is a ..... number.	
5 The S.S. of the inequality : $3 \leq x \leq 7$ on the number line is	irrational

Algebra and Statistics

4 **Put (✔) for the correct statements and (✘) for the incorrect ones :**

1. The arithmetic mean of a set of values = sum of values ÷ its number. ( )
2. If $x = \sqrt{13} - \sqrt{7}$, $y = \sqrt{13} + \sqrt{7}$, then x , y are two conjugate numbers. ( )
3. The irrational number $\sqrt{7}$ lies between 2 and 3 ( )
4. $\sqrt{75} - 2\sqrt{27} = 7\sqrt{3}$ ( )
5. The simplest form of the number $\frac{1}{\sqrt{5}}$ is $\frac{\sqrt{5}}{5}$ ( )

5 **[a] Complete : If the lower limit of a set is 4 and the upper limit is 8**

, then its centre = $\frac{\ldots\ldots + \ldots\ldots}{2} = \ldots\ldots$

[b] Complete the following table to obtain the arithmetic mean of the following frequency distribution :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	7	10	12	13	8	50

Sets	The centre of the set « x »	Frequency « f »	x × f
5 –	10	7	10 × 7 = 70
15 –	20	10	20 × 10 = ……
25 –	……	……	…… × 12 = ……
35 –	……	……	…… × 13 = ……
45 –	……	……	…… × 8 = ……
Total		50	……

The arithmetic mean = $\frac{\Sigma (x \times f)}{\Sigma (f)} = \frac{\ldots\ldots}{\ldots\ldots} = \ldots\ldots$

Some Schools Examinations on Algebra and Statistics

1 Cairo Governorate

Nasr City Educ. Administration
St. Fatima Language School

Answer the following questions :

1 Choose the correct answer :

1 $[0 , 5] \cup [3 , 8[=$ .....

(a) $]3 , 5]$ (b) $[3 , 5]$ (c) $[0 , 8]$ (d) $[0 , 8[$

2 $\sqrt{12} - \sqrt{3} =$ .....

(a) 3 (b) $\sqrt{3}$ (c) $2\sqrt{3}$ (d) $3\sqrt{3}$

3 The S.S. in $\mathbb{R}$ of the equation $x(x^2 - 1) = 0$ is .....

(a) $\{0\}$ (b) $\{1\}$ (c) $\{-1\}$ (d) $\{0 , -1 , 1\}$

4 The arithmetic mean of the values 27 , 8 , 16 , 24 , 6 , k is 14 , then k = ...

(a) 3 (b) 6 (c) 27 (d) 84

5 The additive inverse of the number $-\sqrt{5}$ is .....

(a) $\sqrt{5}$ (b) 5 (c) $\sqrt{2}$ (d) -5

6 The radius length of a sphere is 6 cm. , then its volume is .....

(a) 6π cm^3 (b) 36π cm^3 (c) 72π cm^3 (d) 288π cm^3

2 Complete :

1 $[1 , 5] \cap]-2 , 3] =$ ....

2 The mode of the set of the values 3 , 4 , 7 , 4 , 2 is ....

3 The volume of the cuboid whose dimensions are $\sqrt{2}$, $\sqrt{3}$, $\sqrt{6}$ cm. is ..... cm^3

4 The S.S. in $\mathbb{R}$ of $3 < 2x - 1 < 5$ as an interval is .....

5 The slope of any line parallel to x-axis is .....

3 [a] If $a = \sqrt{3} + \sqrt{2}$, $b = \sqrt{3} - \sqrt{2}$, find the value of : $a^2 - ab + b^2$

[b] Find the S.S. for each of the following inequalities in $\mathbb{R}$, in the form of an interval , then represent the S.S. on the number line :

1 $5x - 3 < 2x + 9$ 2 $1 \leq 3 - 2x < 5$

4 [a] If $M = [2 , \infty[$, $J =]-2 , 3[$, find each of the following using the number line :

1 $M \cap J$ 2 $M - J$

[b] Simplify : $\frac{\sqrt{3}}{\sqrt{5} - \sqrt{3}} + \frac{\sqrt{5}}{\sqrt{5} + \sqrt{3}}$

5 **[a] Reduce to the simplest form :** $2\sqrt{18}+\sqrt{50}+\frac{1}{3}\sqrt{162}$

[b] Find the arithmetic mean of the following frequency distribution :

The Set	5 –	15 –	25 –	35 –	45 –	Total
Frequency	4	5	6	3	2	20

2 Cairo Governorate — El-Maadi Zone, Directing Mathematics

Answer the following questions :

1 **Choose the correct answer :**

[1] The multiplicative inverse of $\frac{\sqrt{3}}{12}$ is .....

(a) $4\sqrt{3}$ (b) 2 (c) $2\sqrt{3}$ (d) $6\sqrt{3}$

[2] The conjugate of the number $2-\sqrt{3}$ is .. ..

(a) $\sqrt{3}-2$ (b) $2-\sqrt{3}$ (c) $\sqrt{2}-3$ (d) $2+\sqrt{3}$

[3] The volume of the cuboid whose dimensions are $\sqrt{8}$, $\sqrt{3}$, $\sqrt{6}$ is .. ..

(a) 144 (b) 12 (c) $\sqrt{120}$ (d) 20

[4] The median for the values 7 , 8 , 9 , 6 and 5 is .....

(a) 7 (b) 8 (c) 9 (d) 10

[5] $4^3+4^3+4^3+4^3=$ ....

(a) 4^{20} (b) 4^4 (c) 4^{12} (d) 16^3

[6] If (2 k , k) satisfies the relation $2x+y=15$, then k = ...

(a) 1 (b) 2 (c) 3 (d) 4

2 **Complete :**

[1] $[2,7]-]2,7[=$ ....

[2] If the mode of the values 8 , 11 , 4 , 2 x is 4 , then $x=$ .....

[3] $\mathbb{R}\cap\mathbb{R}_{-}=$ .....

[4] The slope of the straight line passing through the two points A (5 , 3) , B (2 , 1) is .....

[5] The solution set in $\mathbb{R}$ for $x^2+4=16$ is .....

3 **[a] Put in the simplest form :** $2\sqrt{8}+\sqrt{50}-\sqrt{32}$

[b] Find the solution set in $\mathbb{R}$ for : $3x-4\leq 5$ **and represent it on the number line.**

Final Examinations

4 **[a]** If $x = \frac{2}{\sqrt{7}-\sqrt{5}}$, $y = \sqrt{7}-\sqrt{5}$, find : $(x+y)^2$

[b] Represent graphically the relation : $y = 3x - 2$

5 **[a]** If the volume of a sphere equals $\frac{500}{3}\pi$ cm^3 , find the length of its radius.

[b] The following table shows the frequency of marks of 50 students :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	7	10	12	13	8	50

Find the mean of the marks of the students.

3 Cairo Governorate

El-Khalifa and El-Molastam Zone
El-Helmia Exper. Lang. School

Answer the following questions :

1 **Choose the correct answer :**

1 The S.S. in $\mathbb{R}$ for the equation : $x^3 + 8 = 0$ is ....

(a) $\{4\}$ (b) $\{2\}$ (c) $\varnothing$ (d) $\{-2\}$

2 If the mode of the values 3 , 5 , $x+1$, 5 , 3 , 1 is 5 , then $x =$ .. ..

(a) 5 (b) 4 (c) 3 (d) 6

3 The cube whose volume is 8 cm^3 , the area of one of its faces is .... cm^2

(a) 4 (b) 8 (c) 16 (d) 64

4 If $x < \sqrt{15} < x+1$, $x \in \mathbb{Z}$, then $x =$ .....

(a) 3 (b) 4 (c) 5 (d) $\varnothing$

5 $\sqrt{3} + \sqrt{3} =$ .....

(a) -3 (b) $\sqrt{12}$ (c) 12 (d) 3

6 Which of the following ordered pairs satisfies the relation $2x + y = 5$?

(a) $(-1 , 3)$ (b) $(1 , 3)$ (c) $(3 , 1)$ (d) $(2 , 2)$

2 **Complete :**

1 $\sqrt[3]{\text{.....}} = -\sqrt{9}$

2 If $(-1 , 5)$ satisfies the relation $3x + ky = 7$, then $k =$ .....

3 If the order of the median of some values is fifth , then the number of these values is .....

4 $[-2 , 5] \cap [3 , 7] =$ .....

5 If the lower limit of a set is 4 and the upper limit of the same set is 10 , then the centre of this set is .....

Algebra and Statistics

3 [a] The volume of a sphere is $562.5\ \pi\ cm^3$, find its surface area.

[b] If $x = \frac{4}{\sqrt{7}+\sqrt{3}}$, $y = \sqrt{7}+\sqrt{3}$, then find the numerical value of : $x^2 - 2xy + y^2$

4 [a] Find in $\mathbb{R}$ the S.S. of : $-1 < 3x + 5 \leq 14$ and represent it on the number line.

[b] Graph the relation : $2x + y = 1$

[c] If $A =]-\infty , 3[$, $B = [-1 , 5]$

, find the following using the number line : 1 $A \cap B$ 2 $A - B$

5 [a] Find the slope of $\overleftrightarrow{AB}$ where A (– 1 , 3) , B (2 , 5)

Is the point C (8 , 1) $\in \overleftrightarrow{AB}$?

[b] The following table shows the marks of 50 students in an examination :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	7	10	12	13	8	50

Find the arithmetic mean of this frequency distribution.

4 Giza Governorate

El-Haram Directorate
Al Maarefa Exp. Language School

Answer the following questions :

1 Complete the following :

1 $\sqrt{4} = \sqrt[3]{\ldots\ldots\ldots}$

2 $]-3 , 4[\cup \{-3\} = \ldots\ldots\ldots$

3 The mode of the values 7 , 3 , 8 , 2 , 3 , 4 , 3 , 7 is .....

4 If (3 k , 2 k) satisfies the relation $2x - y + 2 = 12$, then k = ...

5 The slope of the straight line which passes through A (2 , – 5) , B (3 , – 2) is .....

2 Choose the correct answer :

1 The multiplicative inverse of $\frac{\sqrt{2}}{4}$ is .....

(a) $\sqrt{2}$ (b) $2\sqrt{2}$ (c) $4\sqrt{2}$ (d) 2

2 $[2 , 5] -]2 , 5[=$ ....

(a) $\{2 , 5\}$ (b) $[2 , 5[$ (c) $]2 , 5]$ (d) $\varnothing$

3 The mean of the values 4 , 7 , 3 , 9 , 2 is .....

(a) 2 (b) 3 (c) 5 (d) 7

4 The S.S. of the equation $x^2 + 36 = 0$ in $\mathbb{R}$ is ....

(a) $\{6\}$ (b) $\{-6\}$ (c) $\{6 , -6\}$ (d) $\varnothing$

Final Examinations

5 If $5x = 35$, then $2x + 1 =$ ....

(a) 9 (b) 15 (c) 8 (d) 7

6 The order of the median of 5 , 2 , 3 , 9 , 7 , 1 , 6 is .....

(a) 9 (b) 5 (c) 4 (d) 2

3 [a] If $X = [-2, 4]$, $Y =]1, 6]$, find by using the number line : 1 $\grave{X}$ 2 $X \cap Y$ 3 $X - Y$

[b] Find in $\mathbb{R}$ the S.S. of the inequality : $2x + 1 < 7$

4 [a] Find in the simplest form : $2\sqrt{18} + \sqrt{50} - \sqrt{162}$

[b] If $x = 3 + \sqrt{5}$, $y = \frac{4}{3+\sqrt{5}}$, prove that : x , y are conjugate numbers and find the value of : $x^2 - 2xy + y^2$

5 [a] A lead cuboid in which its dimensions are 77 cm. , 24 cm. and 21 cm. It was melted to form a sphere. Find the radius length of that sphere $(\pi = \frac{22}{7})$

[b] Find the median by using the ascending cumulative frequency curve :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	4	5	6	3	2	20

5 Giza Governorate

Abo El-Nomros Educational Zone
Royal House Language Schools

Answer the following questions :

1 Choose the correct answer :

1 $(\sqrt{8} + \sqrt{2})^2 =$ .....

(a) $\sqrt{10}$ (b) 10 (c) 18 (d) $\sqrt{18}$

2 The slope of any line // x-axis is ....

(a) 1 (b) undefined (c) – 1 (d) zero

3 The multiplicative inverse of $(-2\frac{1}{3})$ is .....

(a) $\frac{1}{3}$ (b) $-\frac{7}{3}$ (c) $\frac{3}{7}$ (d) $-\frac{3}{7}$

4 The median of the values 34 , 23 , 25 , 40 , 22 is ....

(a) 22 (b) 23 (c) 24 (d) 25

5 $2a^2b \times$ ..... $= 12a^3b$

(a) $6ab$ (b) $6a$ (c) $6b$ (d) $6ab^2$

Algebra and Statistics

(8) The mode of the values 8 , 5 , $x+3$, 5 , 8 is 8 , then x = ...

(a) 5 (b) 8 (c) 3 (d) -5

2 Complete :

(1) The point (3 , ...) satisfies $2x + y = 10$

(2) The mean of x , $2x$, $3x$ is ....

(3) If $2x = y$, then $x : y$ = ... : ..... .

(4) If the centre of a set is 4 and the upper limit of this set is 8 , then the lower limit of this set is .....

(5) $[2 , 3] - \{2 , 3\}$ = ...

3 [a] If $x = \sqrt{7} - \sqrt{6}$, $y = \frac{1}{x}$, find the value of : $(x + y)^2$ (Show the steps).

[b] Find in $\mathbb{R}$ the S.S. of : $-15 \leq 2x - 3 \leq 5$

[c] Simplify : $\sqrt[3]{54} + 8\sqrt[3]{\frac{1}{4}} + 5\sqrt[3]{16}$

4 [a] If $X =]-\infty , 5]$ and $Y =]1 , 9[$, find by using the number line :

(1) $X \cap Y$ (2) $X \cup Y$ (3) $X - Y$

[b] Find the slope of the straight line passing through the two points (2 , 4) , (4 , 5)

5 [a] Find the S.S. in $\mathbb{R}$: $125x^3 - 7 = 20$

[b] Find the mode of the following distribution :

The Set	2 –	6 –	10 –	14 –	18 –	22 –	26 –	Total
Frequency	3	5	8	10	7	5	2	40

6 Alexandria Governorate

East Educational Zone
Maths Supervision

Answer the following questions :

1 Choose the correct answer from the given ones :

(1) The arithmetic mean for the values : 9 , 6 , 5 , 14 , 1 is ....

(a) 7 (b) 3 (c) 5 (d) 9

(2) The additive inverse of the number $-\sqrt{5}$ is .....

(a) $\sqrt{5}$ (b) 5 (c) $\sqrt{2}$ (d) -5

3 If the lower limit of a set is 4 and the upper limit is 8 , then its centre is .....

(a) 2 (b) 4 (c) 6 (d) 8

4 The simplest form of the expression : $(\sqrt{3}-\sqrt{2})(\sqrt{3}+\sqrt{2})$ is .....

(a) $\sqrt{3}$ (b) 1 (c) $\sqrt{2}$ (d) $2\sqrt{3}$

5 If the radius length of a sphere is 6 cm. , then its volume is ..... π cm^3.

(a) 6 (b) 36 (c) 72 (d) 288

6 $(2\sqrt[3]{2})^3 =$ .....

(a) 4 (b) 8 (c) 16 (d) 40

2 Complete the following :

1 If $3^x = 1$, then $x =$ ..... .

2 The median of the values 2 , 9 , 3 , 7 , 5 is .....

3 $]-2,2] \cup \{-2,0\} =$ .....

4 The mode for the numbers : 3 , 5 , 3 , 4 , 3 is .....

5 A cube whose volume is 8 cm^3 , then the sum of lengths of all its edges is .....

3 [a] Find the value of : $\sqrt{18}+\sqrt[3]{54}-3\sqrt{2}-\frac{1}{2}\sqrt[3]{16}$ (with steps).

[b] Represent graphically the relation : $y = 2 - x$

4 [a] Find the S.S. of the inequality : $-2 < 3x + 7 \leq 10$ in $\mathbb{R}$, then represent the interval of solution on the number line.

[b] Reduce to the simplest form : $\frac{\sqrt{3}}{\sqrt{5}-\sqrt{3}}+\frac{\sqrt{5}}{\sqrt{5}+\sqrt{3}}$ (with steps).

5 [a] If $(\sqrt{3})^x = (2\sqrt{2}-\sqrt{5})(2\sqrt{2}+\sqrt{5})$, then what is the value of x ?

[b] Find the arithmetic mean of the following frequency distribution :

The Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	7	10	12	13	8	50

Answer the following questions :

1 Choose the correct answer :

1 $\frac{3}{4} =$ ..... %

(a) 70 (b) 50 (c) 75 (d) 25

Algebra and Statistics

[2] $[2 , 7] -]2 , 7[=$ .....

(a) $]2 , 7]$ (b) $[2 , 7[$ (c) $\{2 , 7\}$ (d) $[2 , \infty[$

[3] The median of the values 3 , 7 , 2 , 9 , 5 , 11 is .....

(a) 9 (b) 6 (c) 8 (d) 11

[4] The remainder of subtracting $-5x$ from $3x$ equals .....

(a) $-2x$ (b) $8x$ (c) $2x$ (d) $8x^2$

[5] If (a , 4) satisfies the relation $x - y = -1$, then the value of a is .....

(a) $\sqrt{3}$ (b) 5 (c) 27 (d) 3

[6] If the lower limit of a set is 4 and its centre is 9 , then its upper limit is ....

(a) 36 (b) 5 (c) 13 (d) 14

2 Complete :

[1] $\sqrt[3]{5}$ + ... = zero

[2] $\mathbb{R}^+ \cup \mathbb{R}^-$ = ...

[3] $\sqrt{a} + \sqrt{b}$ its conjugate is ..... and their sum is .....

[4] The mode of the set of values 4 , 5 , k + 1 , 3 is 3 , then k = ...

[5] The slope of the straight line parallel to x-axis equals .....

3 [a] Simplify :

[1] $\sqrt{32} - \sqrt{50} + 4\sqrt{\frac{1}{2}}$ [2] $\sqrt[3]{16} - \frac{1}{3}\sqrt[3]{54}$

[b] If $x = \sqrt{7} + \sqrt{5}$, $y = \frac{2}{x}$, find the value of $\frac{x + y}{xy}$ in the simplest form.

4 [a] Find in $\mathbb{R}$ the S.S. of the following inequality : $-1 \leq 3 - 2x < 5$,

then represent the interval of solution on the number line.

[b] Find the height of a right circular cylinder whose height is equal to its base radius length and its volume is 72π cm^3.

[c] Graph the relation : $x + 2y = 3$

5 [a] Find the slope of $\overleftrightarrow{AB}$, where A (– 1 , 3) and B (2 , 5). Is the point C (8 , 1) $\in \overleftrightarrow{AB}$?

[b] Find the mean of the following frequency data :

Sets	8 –	12 –	16 –	20 –	24 –	Total
Frequency	4	10	16	12	8	50

Final Examinations

8 El-Kalyoubia Governorate

Directorate of Education
Inspection of Mathematics

Answer the following questions :

1 Choose the correct answer :

1 Let A (3 , 5) and B (5 , – 1) , then the slope of $\overleftrightarrow{AB}$ = ...

(a) $-\frac{1}{3}$ (b) – 3 (c) 3 (d) $\frac{1}{3}$

2 If the point (a , 1) satisfies the relation $x + y = 5$, then a = ...

(a) 1 (b) – 4 (c) 4 (d) 5

3 The median of the values 34 , 23 , 25 , 40 , 22 , 4 is .....

(a) 22 (b) 23 (c) 24 (d) 25

4 If the mode of the set of values 4 , 11 , 8 , 2 x is 4 , then x = ...

(a) 2 (b) 4 (c) 6 (d) 8

5 The arithmetic mean for the values 9 , 6 , 5 , 14 , 1 is .....

(a) 7 (b) 3 (c) 5 (d) 9

6 The mode for the values 3 , 5 , 3 , 4 , 3 is .....

(a) 3 (b) 4 (c) 5 (d) 12

2 Complete :

1 25% = ... (in the form of $\frac{a}{b}$ in the simplest form)

2 The sum of the two square roots of the number $2\frac{1}{4}$ is .....

3 $|-0.75|$ = ...

4 $\sqrt[3]{-125}$ = ...

5 The multiplicative inverse for $(\sqrt{3}+\sqrt{2})$ in its simplest form is ... ...

3 [a] Find the value of x if : $x^3 - 1000 = 0$

[b] Find the circumference of the circle whose area is 3π cm^2

4 [a] Find : $[2 , \infty[\cap]-2 , 3[$ (by using the number line)

[b] Simplify the following to the simplest form : $(\sqrt{2}+5)(3+\sqrt{2})$

5 [a] Graph the straight line that represents the relation : $x + 2y = 3$

[b] Find the arithmetic mean of the following frequency distribution :

The Set	5 –	15 –	25 –	35 –	45 –	Total
Frequency	4	5	6	3	2	20

Algebra and Statistics

9 El-Gharbia Governorate

Central Mathematics Supervision
Official Languages Schools

Answer the following questions :

1 Choose the correct answer :

1 If the radius length of a sphere is 6 cm. , then its volume is .....

(a) 6π cm^3 (b) 36π cm^3 (c) 72π cm^3 (d) 288π cm^3

2 If the point (a , 1) satisfies the relation $x + y = 5$, then a = ...

(a) 1 (b) -4 (c) 4 (d) 5

3 The median of the values 34 , 23 , 25 , 40 , 22 , 4 is .....

(a) 22 (b) 23 (c) 24 (d) 25

4 The solution set of the equation $x(x^2 - 1) = 0$, $x \in \mathbb{R}$ is .....

(a) $\{1\}$ (b) $\{0\}$ (c) $\{-1\}$ (d) $\{0 , 1 , -1\}$

5 If the arithmetic mean of the values 18 , 21 , 29 , 2 k + 1 , k is 18 , then k = ...

(a) 1 (b) 7 (c) 29 (d) 90

6 $\sqrt{3\frac{3}{8}} = \frac{3}{2}\sqrt{\frac{\dots\dots}{\dots\dots}}$

(a) $\frac{3}{8}$ (b) $\frac{3}{2}$ (c) $\frac{27}{8}$ (d) $\frac{729}{64}$

2 Complete the following :

1 If the lower boundary of a set is 10 and the upper boundary is x and its centre is 15 , then x = ...

2 The multiplicative inverse of the number $(\sqrt{3} + \sqrt{2})$ is ..... . (in the simplest form).

3 $[3 , 4] - \{3 , 5\}$ = ...

4 $\sqrt{64} - \sqrt[3]{64}$ = ...

5 The slope of the straight line passing through (2 , 3) and (5 , – 1) is .....

3 [a] If $x = \sqrt{7} + \sqrt{5}$, $y = \frac{2}{\sqrt{7} + \sqrt{5}}$

1 **Prove that :** x and y are two conjugate numbers.

2 **Find :** xy , $(x + y)^2$

[b] **Find in the simplest form :** $\sqrt{12} + \sqrt[3]{54} - \sqrt{3} - \sqrt[3]{16}$

4 [a] Graph the relation : $2x + 3y = 6$, if the straight line representing this relation intersects the x-axis at A and the y-axis at B , find the area of the triangle OAB where O is the origin point.

[b] **Find the solution set in** $\mathbb{R}$ **:** $8x^3 + 7 = 8$

5 **[a] Find the solution set for the inequality : $2x - 1 \geq 5$ in $\mathbb{R}$**

[b] Find the arithmetic mean of the following frequency distribution :

The Set	5 –	15 –	25 –	35 –	45 –	Total
Frequency	4	5	6	3	2	20

Answer the following questions :

1 **Choose the correct answer from the given ones :**

1 If $x = 3 + \sqrt{3}$ and $y = 3 - \sqrt{3}$, then $x - y =$ .....

(a) $6\sqrt{3}$ (b) -6 (c) $\sqrt{6}$ (d) $2\sqrt{3}$

2 If the order of the median of a set of values is the fifth , then the number of these values is .....

(a) 6 (b) 10 (c) 11 (d) 9

3 The result of $(1 + \sqrt{5})(1 - \sqrt{5}) =$ .....

(a) 2 (b) -4 (c) $-2\sqrt{5}$ (d) $2\sqrt{5}$

4 If A (3 , – 2) , B (0 , 4) , then the slope of $\overleftrightarrow{AB}$ = ...

(a) -2 (b) 2 (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

5 The mean of the values 2 , 8 , 6 , 4 is ....

(a) 3 (b) 4 (c) 5 (d) 6

6 The multiplicative inverse of $\frac{\sqrt{3}}{6}$ is ....

(a) $-\frac{\sqrt{3}}{6}$ (b) $6\sqrt{3}$ (c) $2\sqrt{3}$ (d) $-2\sqrt{3}$

2 **Complete the following :**

1 $[-3 , 7] - \{-3 , 7\} =$ .....

2 The S.S. of the equation $x^2 + 9 = 0$ in $\mathbb{R}$ is .....

3 If the mode of 14 , 8 , $x + 5$, 8 and 14 is 8 , then $x =$ .....

4 The slope of the straight line perpendicular to y-axis is .....

5 If the volume of a sphere is $\frac{9}{2}\pi$ cm^3 , then its radius length is .....

3 **[a] Find in the simplest form : $\sqrt{18} + \sqrt[3]{54} - 3\sqrt{2} - \frac{1}{2}\sqrt[3]{16}$**

[b] If $X = [-3 , 4]$, $Y =]1 , \infty[$, find each of the following using the number line :

1 $X \cap Y$ 2 $X - Y$

Algebra and Statistics

4 **[a] Find in $\mathbb{R}$ the S.S. of the inequality : $-7 \leq -3x + 1 < 13$ and represent it on the number line.**

[b] If $x = \sqrt{6} + \sqrt{5}$, $y = \frac{1}{\sqrt{6} + \sqrt{5}}$:

1 **Prove that : x , y are two conjugate numbers.**

2 **Find : the numerical value of $(x - y)^2$**

5 **[a]** Graph the relation $y + 3x = 6$ and find the slope of the straight line.

[b] Find the arithmetic mean of the following frequency distribution :

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	5	15	20	25	10	75

11 Ismailia Governorate

Directorate of Education
Math's Supervision

Answer the following questions :

1 **Choose the correct answer :**

1 A (2 , 5) , B (3 , 7) , then the slope of $\overleftrightarrow{AB}$ = ...

(a) $\frac{1}{2}$ (b) 2 (c) -2 (d) 5

2 $]3 , 5[\cup \{3 , 5\}$ = ...

(a) $]3 , 5[$ (b) $\{3 , 5\}$ (c) $[3 , 5]$ (d) $[3 , 5[$

3 The median of 4 , 11 , 8 , 16 , 9 , 14 is .....

(a) 10 (b) 8 (c) 16 (d) 9

4 $\mathbb{Q} \cup \mathbb{Q}'$ = ...

(a) $\varnothing$ (b) $\mathbb{R}$ (c) $\mathbb{Z}$ (d) $\mathbb{N}$

5 The slope of x-axis is ....

(a) negative. (b) positive. (c) undefined. (d) zero.

6 $\mathbb{Z}^+ \cap \mathbb{Z}^-$ = ...

(a) zero (b) $\varnothing$ (c) $\mathbb{Z}$ (d) $\mathbb{N}$

2 **Complete :**

1 The mean of 12 , 13 , 10 , 11 , 14 is .....

2 The multiplicative inverse of $\sqrt{3} - \sqrt{2}$ is .....

3 The mode of 5 , 11 , 6 , 2 , 11 , 7 is .....

4 If $\frac{x}{y} = 1$, then $x - y$ = ...

5 $\sqrt{5^2 - 4^2}$ = ...

Final Examinations

3 **[a] Find the S.S. in $\mathbb{R}$ of : $8 \leq 3x + 2 \leq 17$ and represent it on the number line.**

[b] Simplify : $\sqrt{72} + 3\sqrt{18} - 2\sqrt{\frac{1}{2}}$

4 **[a] The volume of a cylinder is 1540 cm^3. , if its height is 10 cm. , find its diameter length. $\left(\pi = \frac{22}{7}\right)$**

[b] Graph the relation : $y = -3$

5 **[a] If $X = [-1 , \infty[$, $Y =]-4 , 3]$, using the number line find :**

1 $X \cap Y$ 2 $X \cup Y$ 3 $\acute{X}$

[b] Find the mean of the following frequency distribution :

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	8	12	14	9	7	50

12 Damietta Governorate

Damietta Inspection of mathematics
Official Language Schools

Answer the following questions :

1 **Choose the correct answer from those given :**

1 $\sqrt{25} - \sqrt[3]{-125} =$ .....

(a) zero (b) 10 (c) 5 (d) ± 5

2 The multiplicative inverse of $\frac{\sqrt{2}}{6}$ is .....

(a) $\sqrt{2}$ (b) $2\sqrt{2}$ (c) $3\sqrt{6}$ (d) $3\sqrt{2}$

3 If the lower limit of a set is 4 and the upper limit is 8 , then its centre is .....

(a) 8 (b) 6 (c) 4 (d) 2

4 The solution set of the equation $x^2 + 9 = 0$ in $\mathbb{R}$ is .....

(a) $\{3\}$ (b) $\{-3\}$ (c) $\varnothing$ (d) $\{-3 , 3\}$

5 The arithmetic mean of the values $6 - k$, 12 , 18 and $k + 4$ is .....

(a) 9 (b) 10 (c) 15 (d) 40

6 If the volume of a cube is 27 cm^3 , then the perimeter of one of its faces is ..... cm.

(a) 12 (b) 9 (c) 36 (d) 3

2 **Complete each of the following :**

1 The slope of the straight line passing through the points (1 , – 1) and (– 3 , 7) is .....

2 If the ordered pair (k , 2 k) satisfies the relation $x + y = 15$, then $k =$ .....

3 The point of intersection of the ascending and descending cumulative frequency curves determines ..... on the set-axis.

Algebra and Statistics

4 If three times of a number is 60 , then $\frac{1}{5}$ of this number equals ....

5 If the mode of the values 5 , 9 , 5 , $x+3$, 9 is 9 , then $x =$ .....

3 **[a]** If $x = \sqrt{5} + \sqrt{2}$, $y = \frac{3}{x}$, **then find the value of :** $\frac{x+y}{xy}$ in its simplest form.

[b] Find in $\mathbb{R}$ the solution set of the inequality : $-3 \leq 4x - 7 \leq 5$

[c] A right circular cylinder whose height is 8 cm. and its volume is 72π cm^3. Find the length of the radius of its base.

4 **[a] Find in its simplest form :** $\sqrt{50} + \sqrt[3]{54} - 10\sqrt{\frac{1}{2}} - \sqrt[3]{16}$

[b] If $X = [-1 , 5[$ and $Y = [2 , \infty[$, **find using the number line :**

1 $X \cup Y$ 2 $X \cap Y$ 3 $X - Y$

5 **[a]** Find three ordered pairs satisfying the relation $2x + y = 7$, then represent it graphically.

[b] Find the arithmetic mean of the following frequency distribution :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	4	5	6	3	2	20

Kafr El-Sheikh Governorate

Directorate of Education
Math's Supervision

Answer the following questions :

1 **Choose the correct answer :**

1 $(\sqrt{5}+\sqrt{3})^2 (\sqrt{5}-\sqrt{3})^2 =$ .....

(a) 2 (b) 3 (c) 4 (d) 8

2 If the lower limit of a set is 4 and the upper limit is 8 , then its centre is .....

(a) 8 (b) 6 (c) 4 (d) 2

3 $2 \in$ .....

(a) $]-1 , \infty[$ (b) $]2 , 5[$ (c) $]-\infty , 1[$ (d) $\{22\}$

4 If $(-1 , 5)$ satisfies the relation $3x + ky = 7$, then $k =$ .....

(a) 7 (b) 4 (c) 3 (d) 2

5 If the slope of the straight line $ax + by + 1 =$ zero is undefined , then = ...

(a) $a = b$ (b) $a =$ zero (c) $b =$ zero (d) $a = -b$

6 The intersection point of the ascending and descending cumulative frequency curves determines the ..... on the sets axis.

(a) mode (b) median (c) mean (d) centre

2 Complete :

1 The slope of the straight line passing through the two points (2 , 6) and (– 1 , 3) equals .....

2 If the mode of the values 4 , 11 , 8 , 2 x is 4 , then x = ...

3 If the mean of the values 9 , 6 , 5 , 14 is k , then k = ...

4 If the volume of a sphere = 36 π cm^3 , then its diameter length = ... cm.

5 The degree of the algebraic term $3x^2y^2$ is .....

3 [a] Find the volume of the right circular cylinder whose diameter length of its base is 10 cm. and its height is 7 cm. $\left(\pi = \frac{22}{7}\right)$

[b] If $X =]-\infty , 5]$, $Y =]1 , 7]$, find by using the number line : 1 $X \cap Y$ 2 $X \cup Y$ 3 $Y - X$

[c] Find the S.S. of the equation : $8x^3 + 7 = 8$ in $\mathbb{R}$

4 [a] Represent graphically the relation $y = x + 2$ and if (– 4 , a) satisfies the relation , find the value of a

[b] Simplify : $\sqrt{18} + \sqrt{50} - 2\sqrt{8}$

[c] Find in $\mathbb{R}$ the S.S. of the inequality : $-8 < 3x + 1 \leq 4$

5 [a] If $x = \sqrt{3} + \sqrt{2}$, $y = \frac{1}{\sqrt{3} + \sqrt{2}}$, then find the value of : $\frac{x + y}{xy}$

[b] From the following frequency table with equal sets :

The Set	10 –	20 –	30 –	40 –	50 –	60 – 70	Total
Frequency	12	15	25	27	k + 4	4	100

1 Find the value of k

2 Calculate the median.

14 Souhag Governorate

Maths Supervision

Answer the following questions :

Choose the correct answer from those given :

1 If the mode of the values 5 , 8 , 6 + x , 9 is 9 , then x = ...

(a) 5 (b) 6 (c) 3 (d) 8

2 The volume of a cube is 27 cm^3 , then the area of one of its faces is .....

(a) 3 cm^2 (b) 9 cm^2 (c) 36 cm^2 (d) 54 cm^2

Algebra and Statistics

3 The slope of any line parallel to X-axis equals .....

(a) 1 (b) undefined (c) -1 (d) zero

4 The multiplicative inverse of $\frac{2\sqrt{3}}{6}$ is .....

(a) $\sqrt{2}$ (b) 6 (c) $\sqrt{3}$ (d) zero

5 $\mathbb{Q} \cup \mathbb{Q}' =$ .....

(a) $\varnothing$ (b) 0 (c) $\mathbb{R}$ (d) $\mathbb{Z}$

6 If $(-1, 5)$ satisfies the relation $3x + ky = 7$, then $k =$ .....

(a) 5 (b) 6 (c) 2 (d) 7

2 Complete the following :

1 $[1, 5] - \{1, 5\} =$ .....

2 The S.S. of the equation : $x(x^2 - 1) = 0$ in $\mathbb{R}$ is .....

3 $(2x^2y) \times (\text{.....}) = 12x^3y$

4 The arithmetic mean of the values 8 , 6 , 3 , 7 , 1 is .....

5 $\sqrt[3]{64} + \sqrt{16} =$ .....

3 [a] Use the following table to find the relation between x , y :

x	-1	0	1	2
y	-1	1	3	5

[b] Find the S.S. of the inequality : $-2 < 3x + 7 \leq 10$ in $\mathbb{R}$, then represent the interval of the S.S. on the number line.

4 [a] If $x = \sqrt{3} + \sqrt{2}$, $y = \frac{1}{\sqrt{3} + \sqrt{2}}$, then find the value of : $\frac{x + y}{xy}$

[b] If $X =]-2, 1]$, $Y = [0, 3[$, use the number line to find :

1 $X \cap Y$ 2 $X \cup Y$ 3 $X - Y$

5 [a] Simplify : 1 $\sqrt{50} + \sqrt{18} - \sqrt{32}$ 2 $\sqrt[3]{54} + 8\sqrt[3]{\frac{1}{4}} + 5\sqrt[3]{16}$

[b] Find the arithmetic mean of the following frequency distribution :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	4	5	6	3	2	20

Final Examinations

15 Luxor Governorate

Luxor Directorate
El-Salem Private Language School

Answer the following questions :

1 Choose the correct answer :

1 The smallest prime number is .....
(a) 0 (b) 1 (c) 2 (d) 3

2 If the mode of the set of values 4 , 11 , 8 , 2 x is 4 , then x = ...
(a) 2 (b) 4 (c) 6 (d) 8

3 If (2 , 5) satisfies the relation $3x + y = c$, then c = ...
(a) 1 (b) -1 (c) 11 (d) -11

4 The solution set of the equation $x^2 + 9 = 0$ in $\mathbb{R}$ is .....
(a) $\varnothing$ (b) $\{-3\}$ (c) $\{3\}$ (d) $\{3 , -3\}$

5 The lower limit of a set is 4 and the upper limit is 8 , then its centre is .....
(a) 2 (b) 4 (c) 6 (d) 8

6 4.274 ≃ ..... (to the nearest $\frac{1}{10}$)
(a) 4 (b) 4.2 (c) 4.3 (d) 4.27

2 Complete :

1 $[2 , 7] - \{2 , 7\}$ = ...
2 The coefficient of the algebraic term $5 a^3 b^2$ is .....
3 The mean of 3 , 5 , 7 , 4 , 1 is .....
4 The slope of any line parallel to y-axis is .....
5 The median of the values 3 , 7 , 6 , 9 , 2 is .....

3 [a] Simplify to the simplest form : $\sqrt{27} - \sqrt{12} + \sqrt{300}$

[b] If $a = \sqrt{5} + \sqrt{3}$, $b = \sqrt{5} - \sqrt{3}$, find : $a^2 + 2ab + b^2$

4 [a] Find the S.S. in $\mathbb{R}$ of the inequality : $2x + 1 \leq 7$, then represent it on the number line.

[b] Find the volume of the sphere whose diameter length is 4.2 cm. $\left(\pi = \frac{22}{7}\right)$

5 [a] Let A (2 , − 1) , B (10 , 3) and C (2 , 3). Find the slope of each of $\overleftrightarrow{AB}$ and $\overleftrightarrow{BC}$

[b] Find the arithmetic mean of the following distribution :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	4	5	6	3	2	20

Final Examinations of

Algebra and Statistics

2019

Some Schools Examinations on Algebra and Statistics

1 Cairo Governorate

Al-Nozha Administration
Al Farouk Islamic Language School

القاهرة

Answer the following questions :

(1) Choose the correct answer from the given ones :

(1) The irrational number lies between 3 and 4 is ... .

(a) 3.5 (b) $3\frac{1}{8}$ (c) $\sqrt{13}$ (d) $\sqrt{20}$

(2) $]-2,1] \cap \{-2,0,1\} =$ .....

(a) $\{-2,0,1\}$ (b) $\{1\}$ (c) $\{0,1\}$ (d) $[-2,1]$

(3) If $x = \sqrt{3}+2$ and $y = \sqrt{3}-2$, then $(xy, x+y) =$ .....

(a) $(5, 2\sqrt{3})$ (b) $(5, 9)$ (c) $(1, 2\sqrt{3})$ (d) $(-1, 2\sqrt{3})$

(4) The line represented the relation : $3x + 8y = 24$ intersects the y-axis at the point .....

(a) $(0, 8)$ (b) $(8, 0)$ (c) $(0, 3)$ (d) $(3, 0)$

(5) If the arithmetic mean of the set of the values $m, m+5, m+4, m+3$ is 9, then $m =$ .....

(a) 2 (b) 6 (c) 9 (d) 10

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(2) Complete each of the following :

(1) The slope of a straight line which passes through $(-3, 1)$ and $(-2, 5)$ is .....

(2) If the mode of the set of the values $17, 8, k+5, 8, 17$ is 8, then $k =$ ....

(3) The multiplicative inverse of $\frac{\sqrt{13}-\sqrt{10}}{3}$ is ..... (In the simplest form)

(4) The radius length of a sphere whose volume is $\frac{9}{2}\pi$ cm^3 is ..... cm.

(5) If the order of the median of the set of values is fifth, then the number of these values equals ....

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(3) [a] If $A =]-1, 3]$ and $B = [0, 5[$, then find :

(1) $A \cap B$ (2) $B - A$ (3) $\mathbb{R}_+ \cap B$

[b] Simplify : $2\sqrt{27} + \frac{1}{3}\sqrt[3]{54} - \sqrt{75} + \sqrt[3]{16}$

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(4) [a] Find in $\mathbb{R}$ the S.S. of each of the following :

(1) $\frac{(2x-1)^3}{3} = 9$ (2) $-1 < 3 - 2x \leq 5$

[b] If $x = 2\sqrt{3} - \sqrt{2}$ and $y = \sqrt{12} + \sqrt{2}$ **Find the value of :** $\frac{x+y}{xy+2}$

5 [a] If (a , 3) and (3 , b) satisfies the relation $2x - y = 1$

(1) Find the value of a and b

(2) Find the slope of the straight line which represented the relation : $2x - y = 1$

[b] From the following frequency table :

Sets	10 –	20 –	30 –	40 –	50 –	60 –	Total
Frequency	10	17	20	32	k + 2	4	100

(1) Find the value of k

(2) Graph the frequency histogram , then find the mode.

2 Cairo Governorate

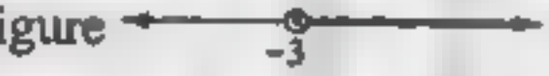
Western Cairo Educational Zone
Mathematics Inspection

Answer the following questions :

1 Choose the correct answer :

(1) If the volume of a cube is 64 cm^3 , then its edge length is .....

(a) 32 cm. (b) 16 cm. (c) 8 cm. (d) 4 cm.

(2) The figure  represents the solution of the inequality ..... in $\mathbb{R}$

(a) $x > -3$ (b) $x \geq -3$ (c) $x < -3$ (d) $x \leq -3$

(3) $\sqrt{3}(\sqrt{11} + \sqrt{3}) =$ .....

(a) $3\sqrt{11} + 2$ (b) $\sqrt{33} + 3$ (c) $11\sqrt{3} + 2$ (d) $2\sqrt{11} + 3$

(4) (3 , 2) does not satisfy the relation .....

(a) $y + x = 5$ (b) $3y - x = 3$ (c) $y + x = 7$ (d) $x - y = 1$

(5) The arithmetic mean of the values : 5 , 12 , 17 , 6 is .....

(a) 10 (b) 12 (c) 4 (d) 17

2 Complete each of the following :

(1) $\sqrt[3]{-64} + \sqrt{16} =$ .....

(2) If the mode of the set of the values : 15 , 9 , $x + 1$, 9 and 15 is 9 , then $x =$ .....

(3) The multiplicative inverse of the number $\frac{3}{\sqrt{3}}$ is $\frac{\ldots\ldots}{\sqrt{3}}$

(4) If the volume of a sphere $= \frac{9}{16}\pi$ cm^3 , then its radius length = ... cm.

(5) If the order of the median of the set of values is fourth , then the number of these values is .....

Algebra and Statistics

3 **[a] If $x = \sqrt{3} - 2$ and $y = \sqrt{3} + 2$, find the value of : $\left(\frac{x-y}{x+y}\right)^2$**

[b] Simplify the following to the simplest form : $\sqrt{98} - \sqrt{128} - \sqrt{18} + 4\sqrt{2}$

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4 **[a] If $X =]-\infty , 2[$ and $Y = [-1 , 5]$, find using the number line :**

(1) $X \cap Y$ (2) $X - Y$

[b] Find the slope of the straight line passing through the two points : A (1 , 3) and B (2 , 3)

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5 **[a] Find the solution set for the following equation in $\mathbb{R}$, then represent the solution on the number line : $-8 \leq 3x + 1 \leq 4$**

[b] Find the mean of the following frequency distribution :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	3	10	12	10	5	40

Answer the following questions :

4 **Complete the following :**

(1) The S.S. of the equation : $x^3 - 27 = 0$ in $\mathbb{R}$ is .....

(2) $[1 , 5] - \{1 , 5\}$ = ...

(3) The slope of the straight line which passes through the two points (2 , – 2) and (4 , 2) is .....

(4) A cube whose volume is 8 cm^3 , the length of its edge = ... cm.

(5) The arithmetic mean of 10 , 6 , 5 , 14 , 15 is .....

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2 **Choose the correct answer :**

(1) If $x = \sqrt{3} + 2$ and $y = \sqrt{3} - 2$, then $x\,y$ = ...

(a) 1 (b) –1 (c) – 4 (d) 3

(2) $]-1 , 3[\cap [-3 , -1]$ = ...

(a) $\varnothing$ (b) $\{-3\}$ (c) $\{-1\}$ (d) $\{3\}$

(3) If the lower limit of a set is 6 and the upper limit is 10 , then its centre is ....

(a) 4 (b) 6 (c) 10 (d) 8

(4) The multiplicative inverse of $\frac{\sqrt{5}}{10}$ is .....

(a) $\sqrt{10}$ (b) $\sqrt{5}$ (c) $2\sqrt{5}$ (d) $-2\sqrt{5}$

(5) The S.S. of $x + 2 \geq 1$ in $\mathbb{R}$ is .....

(a) $[-1 , \infty[$ (b) $]-1 , \infty[$ (c) $[1 , 2]$ (d) $[1 , 2[$

3 **[a] Simplify :** $\sqrt[3]{16} - \frac{1}{3}\sqrt[3]{54} + \sqrt[3]{-2}$

[b] Find the S.S. of : $-2 < 3x + 7 \leq 10$ in $\mathbb{R}$ **, then represent the interval of the solution set on the number line.**

4 **[a] If** $x = \sqrt{5} + \sqrt{2}$ **and** $y = \sqrt{5} - \sqrt{2}$ **, then find the value of :** $\frac{x + y}{x\,y - 1}$

[b] If $X = [-2 , 1]$ **and** $Y = [0 , \infty[$ **Find :**

(1) $X \cap Y$ (2) $X \cup Y$ (3) $Y - X$

5 **[a] Find the arithmetic mean of the following frequency distribution :**

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	4	5	6	3	2	20

[b] Represent graphically the relation : $2y - x = 2$

4 Giza Governorate

Al-Agoza Directorate
Supervision of math.

Answer the following questions :

1 **Complete :**

(1) The S.S. of the equation $x^2 + 9 = 0$ in $\mathbb{R}$ is .....

(2) $\sqrt{16} = \sqrt[3]{.....}$

(3) The multiplicative inverse of the number $2\sqrt{3}$ is .....

(4) $\{8 , 9 , 10\} \cap]8 , 10[=$ .....

(5) The length of the edge of a cube of volume $15\frac{5}{8}$ cm^3 is .....

2 **Choose the correct answer :**

(1) The mean of the set of numbers : 5 , 12 , 17 , 6 is .....

(a) 40 (b) 20 (c) 5 (d) 10

(2) The S.S. of the equation : $x^2 - 1 = 8$ in $\mathbb{R}$ is .....

(a) $\varnothing$ (b) $\{3\}$ (c) $\{-3\}$ (d) $\{-3 , 3\}$

Algebra and Statistics

(3) The conjugate of $\frac{1}{\sqrt{3}-\sqrt{2}}$ is .....

(a) $\sqrt{3}-\sqrt{2}$ (b) $3-\sqrt{2}$ (c) $3+\sqrt{2}$ (d) $\sqrt{3}+\sqrt{2}$

(4) The value of b that makes $(-2, 3)$ satisfies the relation : $3x + by = 3$ is .....

(a) 3 (b) 2 (c) 1 (d) –3

(5) If the mode of the values : $5, x+3, 9, 4$ is 9 , then $x =$ .....

(a) 5 (b) 4 (c) 6 (d) 3

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3 **[a] Represent graphically the relation : $y = 2x - 3$**

[b] If $X =]-\infty, 2]$ and $Y = [-1, 8]$, using the number line , find :

(1) $X \cup Y$ (2) $X - Y$ (3) $X \cap Y$

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4 **[a] Simplify :**

(1) $\sqrt{50}+\sqrt{18}-\sqrt{32}$ (2) $\sqrt[3]{54}+8\sqrt[3]{\frac{1}{4}}+5\sqrt[3]{16}$

[b] Find the slope of the straight line passing through the two points : A (5 , –3) and B (6 , 2)

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5 **[a] Write two ordered pairs satisfying the relation : $y = x + 1$**

[b] Find the arithmetic mean of the following frequency distributive :

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	10	20	25	30	15	100

5 Giza Governorate

El-Haram Educational Zone
Pyramids Language School

Answer the following questions :

1 **Complete the following :**

(1) $\sqrt[3]{64} = \sqrt{.....}$

(2) If $a = \sqrt{5}-2$, $b = \sqrt{5}+2$, then $a^2 b^2 =$ .....

(3) The S.S. of the equation $x^2 + 5 = 0$ in $\mathbb{R}$ is .....

(4) $[-1, 5] \cap [3, 7] =$ .....

(5) If $a^2 + b^2 = 25$ and $ab = 5$, then $\frac{a}{b}+\frac{b}{a} =$ .....

2 **Choose the correct answer :**

(1) $\left(\sqrt{2}+\sqrt{8}\right)^2 =$ .....

(a) 18 (b) $\sqrt{10}$ (c) 4 (d) 10

(2) The sum of the real numbers of the interval $[-150, 150]$ is .....

(a) 300 (b) -300 (c) zero (d) 150

(3) The volume of a cuboid whose dimensions $\sqrt{2}$ cm. , $\sqrt{3}$ cm. , $\sqrt{6}$ cm. is .....

(a) 6 cm^3 (b) 36 cm^3 (c) $6\sqrt{6}$ cm^3 (d) $18\sqrt{2}$ cm^3

(4) $\sqrt{(10)^2-(6)^2} =$ ..... .

(a) 4 (b) 8 (c) ± 4 (d) ± 8

(5) $\sqrt[3]{3\sqrt{3}} =$ .....

(a) 3 (b) $\frac{1}{2}$ (c) $\sqrt[3]{3}$ (d) $\sqrt{3}$

3 **[a] Simplify the following :**

(1) $6\sqrt{\frac{5}{2}} + 20\sqrt{\frac{2}{5}}$ (2) $4\sqrt[3]{\frac{1}{2}} + 3\sqrt[3]{32} - \sqrt[3]{4}$

[b] Find the S.S. in $\mathbb{R}$: $(x-1)^2 = 4$

4 **[a]** If (3 , 2) satisfies the relation $x + 2y = m$, then find the value of m

[b] Find the slope of the straight line passes through the two points (3 , 5) and (4 , 7)

[c] Represent graphically : $y = x + 2$

5 **[a] Find the median of : 28 , 25 , 24 , 26 , 27**

[b] Find the arithmetic mean of the following frequency distribution :

Sets	10 –	20 –	30 –	40 –	50 –	Sum
Frequency	4	6	8	7	5	30

6 Alexandria Governorate

Middle Educational Zone
Math's Supervision

Answer the following questions :

1 **Complete each of the following :**

(1) If $3^x = 1$, then $x =$ .....

(2) The S.S. of the equation : $x(x^3 - 1) = 0$ in $\mathbb{R}$ is .....

Algebra and Statistics

(3) $]5 , 7[\cup \{5 , 7\}$ = ...

(4) If the arithmetic mean of the values : 9 , 6 , 5 , 14 , k is 7 , then k = ...

(5) If the slope of the straight line : $k x + 2y = 5$ is zero , then k = ...

2 Choose the correct answer from the given ones :

(1) $\left(2\sqrt[3]{2}\right)^3$ = ...

(a) 4 (b) 8 (c) 16 (d) 40

(2) If the volume of a cube is 27 cm^3 , then the area of its face is .... cm^2

(a) 3 (b) 9 (c) 36 (d) 54

(3) If the order of the median of a set of values is the fourth , then the number of values is .....

(a) 3 (b) 5 (c) 7 (d) 9

(4) If the mode of the set of values : 5 , 9 , 5 , $x - 2$, 9 is 9 , then x = ...

(a) 5 (b) 57 (c) 9 (d) 11

(5) If (– 1 , 5) satisfies the relation : $3x + k y = 7$, then k = ...

(a) 2 (b) – 2 (c) 1 (d) 10

3 [a] Find the value of : $\sqrt{18} + \sqrt[3]{54} - 3\sqrt{2} - \frac{1}{2}\sqrt[3]{16}$

[b] If $x = \sqrt{5} + \sqrt{2}$ and $y = \sqrt{5} - \sqrt{2}$ **, find the value of :** $\frac{x + y}{x y - 1}$

4 [a] Write in the form of an interval the S.S. of the inequality : $x + 4 \geq 2x - 3 > x + 1$

[b] Represent graphically the relation : $y = 2 - x$

5 [a] The volume of a sphere is $\frac{99000}{7}$ cm^3 Calculate its radius length. $\left(\pi = \frac{22}{7}\right)$

[b] Find the arithmetic mean of the following frequency distribution :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	7	10	12	13	8	50

7 Alexandria Governorate

El-Montazah Educational Zone
Math's Supervision

Answer the following questions :

1 Complete each of the following :

(1) The multiplicative inverse for $\frac{-\sqrt{2}}{6}$ is .....

(2) If $5x - 3y = 0$, then $x : y$ = ... : .....

(3) The slope of any line parallel to X-axis = ...

(4) $\sqrt{5}+\sqrt{2}$ its conjugate is ... . and their product is .....

(5) If $(-1\ ,5)$ satisfies the relation $3X + k\,y = 7$, then k = ...

2 Choose the correct answer :

(1) If $|a| = 5$, then a = ...

(a) 5 (b) –5 (c) ± 5 (d) $\sqrt{5}$

(2) The order of the median of the set of values : 4 , 5 , 6 , 7 , 8 is .....

(a) third. (b) fourth. (c) fifth. (d) sixth.

(3) The S.S. of the inequality $-2X \geq 6$ in $\mathbb{R}$ is ....

(a) $]-\infty\ ,-3[$ (b) $]-\infty\ ,-3]$ (c) $[-3\ ,\infty[$ (d) $]-3\ ,\infty[$

(4) $\{8\ ,9\ ,10\} -]8\ ,10[$ = ...

(a) $\varnothing$ (b) $\{9\}$ (c) $\mathbb{N}$ (d) $\{8\ ,10\}$

(5) The mode of the set of values : 5 , 9 , 5 , $X-2$, 9 is 9 , then X = ...

(a) 5 (b) 57 (c) 9 (d) 11

3 [a] Find in the simplest form : $2\sqrt{18}+\sqrt{50}+\frac{1}{3}\sqrt{162}$

[b] If $a-b=2\sqrt{7}$ **, then find the value of :** $a(a-b)^2-b(a-b)^2$

[c] Find the slope of line $\overleftrightarrow{AB}$, where A $(-1\ ,3)$ and B $(2\ ,5)$ Is the point C $(8\ ,1) \in \overleftrightarrow{AB}$?

4 [a] Find the S.S. of the inequality : $-1 < 2X - 3 \leq 5$ **in** $\mathbb{R}$ **and represent the interval of solution on the number line.**

[b] Find the lateral area for right circular cylinder of volume 924 cm^3 , and its height 6 cm. $\left(\pi = \frac{22}{7}\right)$

5 [a] If $\left(\sqrt{3}\right)^X = \left(2\sqrt{2}-\sqrt{5}\right)\left(2\sqrt{2}+\sqrt{5}\right)$ **, then what is the value of** X ?

[b] By using the following distribution :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	3	10	k – 2	10	5	40

(1) Find the value of k

(2) Find the arithmetic mean.

Algebra and Statistics

8 El-Kalyoubia Governorate

Mathematics Inspection

Answer the following questions :

1 Choose the correct answer :

(1) $\mathbb{Q} \cap \mathbb{Q}' =$ .....

(a) $\mathbb{R}$ (b) $\mathbb{R}_+$ (c) $\mathbb{R}_-$ (d) $\varnothing$

(2) The S.S. of the equation : $x^3 + 27 = 0$ in $\mathbb{R}$ is .....

(a) $\{3\}$ (b) $\{-3\}$ (c) $\varnothing$ (d) $\{3\sqrt{3}, -3\sqrt{3}\}$

(3) $\{x : x \in \mathbb{R}, x < 1\} =$ .....

(a) $\{0, -1, -2\}$ (b) $]-\infty, 1]$ (c) $]-\infty, 1[$ (d) $]1, \infty[$

(4) The mode of values : 3 , 5 , 3 , 6 , 5 , 3 , 7 is .....

(a) 3 (b) 5 (c) 7 (d) 6

(5) The arithmetic mean of the values : 6 , 19 , 32 , 25 , 8 is .....

(a) 90 (b) 32 (c) 18 (d) 6

2 Complete the following :

(1) If $3^x = 1$, then $x =$ .....

(2) The conjugate of the number $\frac{4}{\sqrt{7}-\sqrt{3}}$ is .....

(3) The total area of a cube of edge length 4 cm. is ..... cm^2

(4) If the point (6 , a) lies on the straight line whose equation is $x + y = 3$, then a = ...

(5) The median of the set of the values : 2 , 9 , 3 , 7 , 5 is .....

3 **[a] If $x = \sqrt{5} + \sqrt{2}$ and $y = \sqrt{5} - \sqrt{2}$ Find the value of : $\frac{x + y}{x\,y + 1}$**

[b] If $X = [-1, 2]$ and $Y = [1, \infty[$ Find :

(1) $X \cap Y$ (2) $X \cup Y$

4 **[a] Find the S.S. of the inequality : $7 \geq 2x + 1 > 3$**

[b] The radius length of the base of a right cylinder is $4\sqrt{2}$ cm. and its height is 9 cm. Find its volume in terms of π

Final Examinations

5 [a] Find the slope of $\overleftrightarrow{AB}$ where A (2 , – 1) and B (– 1 , 3) , then draw $\overleftrightarrow{AB}$ on 2-dimensions coordinate.

[b] Find the arithmetic mean of the following frequency distribution :

The sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	3	4	7	4	2	20

9 El-Sharkia Governorate

Directorate of Education
Dept. of Governmental L. Schools

Answer the following questions :

1 Complete each of the following :

(1) $[2 , 7[\cup \{2 , 7\}$ = ...

(2) If the volume of a cube is 64 cm^3 , then its lateral area = ... cm^2

(3) If (k , 4) satisfies the relation $x + 2y = 15$, then k = ...

(4) If $a = \sqrt{5} + 1$ and $b = \sqrt{5} - 1$, then a – b = ...

(5) The mean of the numbers 3 , 4 , 6 , 7 is .....

2 Choose the correct answer :

(1) The additive inverse of $\sqrt{5} - \sqrt{3}$ is .....

(a) $\sqrt{5} - \sqrt{3}$ (b) $\sqrt{3} + \sqrt{5}$ (c) $-\sqrt{5} - \sqrt{3}$ (d) $\sqrt{3} - \sqrt{5}$

(2) The S.S. of the equation $x^2 + 16 = 0$ in $\mathbb{R}$ is .....

(a) {4} (b) $\varnothing$ (c) {4 , – 4} (d) {– 4}

(3) $\left(\sqrt{5} + \sqrt{3}\right)^2 \left(\sqrt{5} - \sqrt{3}\right)^2$ = ...

(a) 4 (b) 2 (c) 8 (d) 3

(4) The slope of any line parallel to x-axis equals .....

(a) 1 (b) undefined (c) – 1 (d) zero

(5) If $5x = 35$, then $2x + 1$ = ...

(a) 7 (b) 15 (c) 8 (d) 71

3 [a] **Find the value of :** $\sqrt{50} - \sqrt{8} + 2\sqrt{\frac{1}{2}} - \sqrt{18}$

[b] If $x = \frac{-4}{3 + \sqrt{5}}$ **and** $y = 3 + \sqrt{5}$ **Prove that :** x **and** y **are conjugate numbers**

, then find the value of : $(x + y)^2$

Algebra and Statistics

4 **[a] If $A =]-2 , 6]$ and $B = [4 , \infty[$, use the number line to find :**

(1) $A \cup B$ (2) $A \cap B$

[b] If the volume of a sphere is 36π cm^3. Find the length of its radius , then calculate its total area ($\pi = 3.14$)

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5 **[a] Graph the linear relation :** $y = 2x - 1$

[b] Solve in $\mathbb{R}$ the inequality : $x + 2 \leq 3x + 2 < x + 16$

[c] Find the mean of the following data :

Sets	20 –	30 –	40 –	50 –	60 –	70 –	Total
Frequency	10	15	22	25	20	8	100

Answer the following questions :

1 **Complete the following :**

(1) $[-5 , 9] - \{-5 , 9\} =$ .....

(2) The S.S. of the equation : $x^3 + 8 = 0$ in $\mathbb{R}$ is .....

(3) If the mode of 14 , 9 , $x + 5$, 9 and 14 is 9 , then $x =$ .. .. . .

(4) The slope of the straight line parallel to x-axis is .....

(5) If the volume of the sphere is $\frac{1}{6}\pi$ cm^3 , then its radius length = ...

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2 **Choose the correct answer :**

(1) If $x = 5 + \sqrt{3}$ and $y = 5 - \sqrt{3}$, then $x - y =$ ....

(a) 10 (b) – 10 (c) $\sqrt{6}$ (d) $2\sqrt{3}$

(2) If the order of the median of the set of values is the fourth , then the number of values is .....

(a) 8 (b) 10 (c) 7 (d) 9

(3) $(1 + \sqrt{7})(1 - \sqrt{7}) =$ .....

(a) 2 (b) – 4 (c) $-2\sqrt{7}$ (d) – 6

(4) If A (2 , – 2) and B (1 , 4) , then the slope of $\overleftrightarrow{AB}$ = ...

(a) – 2 (b) 2 (c) – 6 (d) $-\frac{1}{2}$

(5) The mean of the values 3 , 7 , 8 , 2 is .....

(a) 2 (b) 4 (c) 5 (d) 6

3 **[a] Simplify to the simplest form :** $2\sqrt{18}+\sqrt[3]{54}-12\sqrt{\frac{1}{2}}-5\sqrt[3]{16}$

[b] If $X=[-2\ ,5]$ and $Y=]2\ ,\infty[$

Find : (1) $X\cap Y$ (2) $Y-X$

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4 **[a] Find in $\mathbb{R}$ the S.S. of the inequality :** $-9\leq -3x+2<17$

[b] If $x=\sqrt{7}+\sqrt{6}$ and $y=\frac{1}{\sqrt{7}+\sqrt{6}}$

(1) **Prove that :** x and y are conjugate. (2) **Find :** the numerical value of x^2-y^2

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5 **[a] Graph :** $y+2x=4$ Does the point $(-1\ ,6)$ belong to the straight line ?

[b] Using the following distribution , find the arithmetic mean :

Sets	10 –	20 –	30 –	40 –	50 –
Frequency	6	14	21	24	10

11 Ismailia Governorate

Directorate of Education
El-Manar Language School

Answer the following questions :

1 **Complete the following :**

(1) $[-1\ ,5]-]-1\ ,5[=$ .....

(2) If $(k\ ,5)$ satisfies the relation : $2y+2x=8$, then $k=$ .....

(3) The S.S. of the equation $x^3+125=0$ in $\mathbb{R}$ is .....

(4) The additive inverse of $\sqrt{7}+\sqrt{3}$ is .....

(5) If the dimensions of a rectangle is $(\sqrt{11}+2)$ cm. and $(\sqrt{11}-2)$ cm. , then its area = ... cm^2

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2 **Choose the correct answer :**

(1) If the mode of the values $8\ ,7\ ,8\ ,5\ ,x-5\ ,5$ is 8 , then $x=$ .....

(a) 8 (b) 10 (c) 5 (d) 13

(2) The slope of the straight line passing through the two points $(-2\ ,2)$ and $(-8\ ,5)$ is .....

(a) $\frac{-7}{10}$ (b) $\frac{10}{7}$ (c) $\frac{-6}{12}$ (d) -2

Algebra and Statistics

(3) If the volume of a cube is 27 cm^3 , then the sum of edges of this cube is .... cm.

(a) 36 (b) 3 (c) 12 (d) 27

(4) The median of the values 31 , 13 , 9 , 60 , 1 , 45 , 4 is .....

(a) 60 (b) 13 (c) 31 (d) 163

(5) $]-\infty , 0] =$ .....

(a) $\mathbb{R}_+$ (b) $\mathbb{R}_-$

(c) set of non positive real numbers. (d) set of non negative real numbers.

3 **[a] Find the simplest form of :** $\sqrt[3]{54} - \frac{1}{2}\sqrt[3]{16} + \sqrt[3]{-2}$

[b] If $x = \sqrt{5} + \sqrt{3}$ and $y = \frac{2}{\sqrt{5}+\sqrt{3}}$, **find the value of :** $\frac{x+y}{xy}$

4 **[a] Find the S.S. in $\mathbb{R}$ of the inequality :**

$-2 < 3x + 7 \leq 10$ and represent it on the number line.

[b] If $X =]-\infty , 5]$ and $Y =]1 , 9[$ **Find using the number line :**

(1) $X \cap Y$ (2) $X \cup Y$ (3) $X - Y$ (4) X'

5 [a] If the volume of a sphere is 288 π cm^3 find its area.

[b] The following table shows the frequency distribution of marks of 40 students in an algebra exam :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	7	9	12	x	4	40

(1) Find the value of x (2) Find the arithmetic mean.

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Educational Directorate
Math inspection

Answer the following questions :

1 **Choose the correct answer :**

(1) The multiplicative inverse to the number $\frac{3}{\sqrt{2}}$ is .....

(a) $\frac{\sqrt{2}}{3}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{\sqrt{2}}{2}$ (d) $2\sqrt{3}$

(2) The solution set of the equation : $x^3 = 8$ in $\mathbb{R}$ is .....

(a) $\varnothing$ (b) $\{2\}$ (c) $\{-2\}$ (d) $\{0\}$

(3) $\mathbb{Q} \cup \grave{\mathbb{Q}}$ = ...

(a) $\varnothing$ (b) 0 (c) $\mathbb{R}$ (d) $\mathbb{Z}$

(4) The conjugate of the number $\sqrt{2}-\sqrt{3}$ is .....

(a) $\sqrt{2}+\sqrt{3}$ (b) $\sqrt{3}-2$ (c) $2-\sqrt{3}$ (d) $-\sqrt{2}+\sqrt{3}$

(5) The arithmetic mean of the values 2 , 5 , 8 is .....

(a) 5 (b) 4 (c) 3 (d) 2

2 Complete each of the following :

(1) The mode of the values 5 , 5 , 6 , 4 , 5 is .....

(2) The slope of the straight line which parallel to the x-axis = ...

(3) $[2 , 8[\cup \{8\}$ = ...

(4) $\sqrt[3]{\text{.....}} = \sqrt{4}$

(5) A cube of side length 3 cm. , then its volume = ... cm^3

3 [a] Find the solution set in $\mathbb{R}$ to the following inequality in the form of an interval :

$x - 2 > 3$

[b] If $x = \sqrt{3}+\sqrt{2}$ and $y = \sqrt{3}-\sqrt{2}$ Find the value of : $x \times y$

4 [a] Without using calculator , simplify : $\sqrt{2}+\sqrt{8}-\sqrt{18}$

[b] Find the slope of the straight line which passes through the two points (2 , 3) and (1 , 2)

5 [a] Write three ordered pairs satisfy the relation : $x + y = 5$

[b] Find the arithmetic mean for the following frequency distribution :

Sets	2 –	4 –	6 –	Total
Frequency	2	4	2	8

Answer the following questions :

1 Choose the correct answer :

(1) The mean of the values : 21 , 19 , 27 , 3 , 5 is .....

(a) 90 (b) 32 (c) 18 (d) 15

Algebra and Statistics

(2) If $x = \sqrt{7} - \sqrt{5}$ and $y = \sqrt{7} + \sqrt{5}$, then $(xy)^3 =$ .....

(a) 4 (b) 6 (c) 8 (d) 9

(3) $[1 , 3] - \{1 , 3\} =$ .....

(a) $]1 , 3[$ (b) $]-1 , -3[$ (c) $[1 , 3[$ (d) $]-1 , 3[$

(4) $\mathbb{R} =$ .....

(a) $[0 , \infty]$ (b) $]-\infty , \infty[$ (c) $[0 , \infty[$ (d) $]-\infty , 0]$

(5) If A (2 , 7) and B (5 , – 2) , then the slope of $\overleftrightarrow{AB} =$ .....

(a) – 2 (b) 2 (c) – 3 (d) 3

---

2 **Complete :**

(1) The volume of a sphere whose diameter length is 6 cm. = ... π cm^3.

(2) The S.S. for the equation $x^3 + 8 = 0$ in $\mathbb{R}$ is .....

(3) If (k , 2 k) satisfies $x + y = 15$, then k = ...

(4) The slope of any line parallel to the x-axis = ...

(5) If the area of one face of a cube = 9 cm^2 , then its volume = ... cm^3.

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3 **[a] Simplify :** $\sqrt{18} + \sqrt[3]{54} - 3\sqrt{2} - \sqrt[3]{16}$

[b] Find in $\mathbb{R}$ the S.S. of the following inequality : $-1 \leq 5x + 4 \leq 14$, then represent the S.S. on the number line.

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4 **[a] If** $x = \sqrt{6} + \sqrt{5}$ **and** $y = \sqrt{6} - \sqrt{5}$ **Find :** $(x + y)^2$

[b] If $X =]-3 , 2]$ **and** $Y =]-1 , 5]$ **, then find :**

(1) $X \cap Y$ (2) $X \cup Y$

---

5 **[a]** Represent the relation $x + y = 3$ on the coordinate plane.

[b] Find the mean for the following frequency distribution :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	4	5	6	3	2	20

Final Examinations

14 Beni Suef Governorate

Directorate Of Official Language School
Education administration

Answer the following questions :

1 Choose the correct answer :

① The irrational number lies between – 2 and – 1 is .....

(a) – 3 (b) $-1\frac{1}{2}$ (c) $-\sqrt{3}$ (d) $\sqrt{2}$

② $\sqrt[3]{x^6} = \sqrt{\ldots\ldots}$

(a) x^3 (b) x^2 (c) x (d) x^4

③ $|-5|-|5| =$ .....

(a) – 10 (b) – 5 (c) 0 (d) 10

④ (3 , 2) does not satisfy the relation .....

(a) $y + x = 5$ (b) $3y - x = 3$ (c) $y + x = 7$ (d) $x - y = 1$

⑤ If the volume of a right circular cylinder is 90π cm^3 and its height is 10 cm. , then the radius length of its base equals ..... cm.

(a) 3 (b) 4.5 (c) 5 (d) 9

2 Complete :

① If (a , 3) satisfies the relation $2x - y = 7$, then a = ...

② $\left(\frac{-5}{7}\right) \times \left(\frac{-7}{5}\right) =$ .....

③ If the arithmetic mean of the values 9 , 6 , 5 , 14 , x is 7 , then $x =$ .....

④ The point of intersection of the ascending and descending cumulative frequency curves determines ..... on the set-axis.

⑤ If the sum of five numbers equals 30 , then the arithmetic mean of these numbers is .....

3 [a] Simplify to the simplest form : $\sqrt[3]{-16} + \frac{14}{\sqrt{7}} - \sqrt{28} + \sqrt[3]{54}$

[b] If $x = \frac{4}{3+\sqrt{5}}$ and $y = 3 + \sqrt{5}$, **Find the value of :** $x^2 + y^2$

4 [a] If $X = [-1 , 4]$, $Y = [3 , \infty[$ and $Z = \{3 , 4\}$, **find each of the following using the number line :**

① $X - Y$ ② $Y \cap Z$

[b] Find the solution set ot the inequality $3 - 2x \leq 7$ in $\mathbb{R}$ in the form of an interval , then represent the solution on the number line.

5 **[a]** Let A (2 , – 1) , B (10 , 3) and C (2 , 3) , **find the slope of each of :** $\overleftrightarrow{AB}$ and $\overleftrightarrow{AC}$

[b] The following table shows the frequency distribution of the weekly bonus of 100 workers in a factory :

Bonus in L.E.	20 –	30 –	40 –	50 –	m –	70 –
Number of workers	10	k	22	26	20	8

① Find the value of each of k and m

② Graph the frequency histogram , then find the mode value of the weekly bonus.

15 Assiut Governorate — Badr Language School

Answer the following questions :

1 **Choose the correct answer from those given :**

① If the volume of a cube is 27 cm^3 , then the area of one of its faces is .....

(a) 3 cm^2 (b) 9 cm^2 (c) 36 cm^2 (d) 54 cm^2

② The S.S. of the equation : $x^2 + 3 = 0$ in $\mathbb{R}$ is = ...

(a) $\varnothing$ (b) $\{-\sqrt{3}\}$ (c) $\{\sqrt{3}\}$ (d) $\{-\sqrt{3} , \sqrt{3}\}$

③ If $x = \sqrt{3} + 2$ and $y = \sqrt{3} - 2$, then $(xy , x + y)$ = ...

(a) $(1 , 2\sqrt{3})$ (b) $(-1 , 2\sqrt{3})$ (c) $(5 , 2\sqrt{3})$ (d) (5 , 9)

④ If the median of the set of the values : k + 1 , k + 2 , k + 5 , k + 4 , k + 3 where is k is a positive number is 13 , then k = ...

(a) 2 (b) 5 (c) 10 (d) 13

⑤ If the mode of the set of values : 4 , 11 , 8 , 2 x is 4 , then x = ...

(a) 2 (b) 4 (c) 6 (d) 8

---

2 **Complete :**

① If (– 1 , 5) satisfies the relation 3 x + k y = 7 , then k = ...

② $[2 , 6] - \{2 , 6\}$ = ...

③ If the arithmetic mean of the values 9 , 6 , 5 , 14 , k is 7 , then k = ...

④ The slope of the straight line passing through the two points (2 , 6) and (– 1 , 3) is .....

⑤ The multiplicative inverse of the number $\sqrt{3} - \sqrt{2}$ is ..... (in the simplest form)

Final Examinations

3 **[a]** If $x = \sqrt{5} + \sqrt{2}$ and $y = \sqrt{5} - \sqrt{2}$, **find the value of :** $\frac{x + y}{xy - 1}$

[b] Find the S.S. of the inequality : $-5 \leq 2x - 3 < 5$ **in** $\mathbb{R}$, **then represent it on** the number line.

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4 **[a] Prove that :** $\sqrt[3]{128} + \sqrt[3]{16} - 2\sqrt[3]{54} = 0$

[b] Represent graphically the relation : $y = 2 - x$

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5 **[a]** If $X =]-\infty , 2[$ and $Y = [-1 , 5]$ **find as an intervals using the number line :**

① $X \cup Y$ ② $X \cap Y$ ③ $X - Y$

[b] Find the arithmetic mean of the following frequency distribution :

Sets	5 –	15 –	25 –	35 –	45 –	Total
Frequency	7	10	12	13	8	50